



INDIANA NATIVE PLANT and Wildflower Society

Volume 6 Number 1 • Spring 1999

NEWS

Sedges Our Most Diverse and Least Understood Group of Native Flora

by Kevin Tunesvick

Sedges occur in nearly every native habitat in Indiana, from shallow-water emergent communities to the driest hillsides. Nearly 8% of our native plant species are in the genus *Carex*. With 150 species of sedges, *Carex* is by far Indiana's largest genus of native plants. Yet many people who are otherwise very knowledgeable about plants can identify only a few species, if any.

Although some sedge species are extraordinarily hard to identify, many distinctive ones can be easily learned with a little patience and the use of a sedge key. There are two distinct types of

dichotomous keys for the genus *Carex*. The first type, the artificial key, lumps all species together, distinguishing among them on the basis of physical characteristics. *Plants of the Chicago Region* by Floyd Swink and Gerould Wilhelm is a good example of a text with an

artificial key. A second type of key, utilized in Deam's *Flora of*

Indiana, first separates the genus into two subgenera. The subgenera are then separated into various sections. A separate short dichotomous key then divides each section into the component species. I have used both key types and found both satisfactory.

Sedges are considered difficult to identify because of the short season for which the keys are usable. Nearly all sedge identification is

based on the mature fruit, consisting of a seed enclosed in a husk-like structure

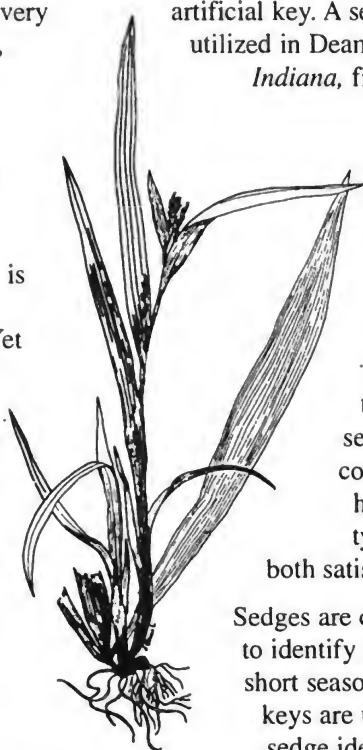
known as a perigynium. These cool-season plants flower in spring to early summer, and the fruit of many species ripens between late April and mid July. Therefore, those interested in learning sedge taxonomy should concentrate their efforts in this period. In general, woodland

species tend to ripen earlier in the season than those of sunny habitats.

Sedge abundance and diversity reaches its peak in wetland habitats. In fact, permanently or seasonally saturated herbaceous communities are often referred to as sedge meadows due to the dominance of this genus. Sedge meadows were frequent in fens, glacial sloughs, and pond margins in presettlement times. Unfortunately, drainage for agriculture, peat mining, and degradation due to fire suppression, invasion of exotic species, and poor

Sedges... continued on page 2

Blunt-Scaled Wood Sedge
(*Carex albursina*)
by Jan Glimn-Lacy



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water quality have destroyed most of this diverse habitat.

Tussock Sedge (*Carex stricta*) is usually the dominant species of sedge meadows. It forms a dense clump up to 18 inches in height with an inconspicuous inflorescence appearing in May. The fine bright green foliage makes it a very attractive plant for wet spots or water gardens. The roots and stem bases of these long-lived clumps gradually build up small mounds, resulting in the uneven hummocky terrain associated with sedge meadows. Other species that frequently co-dominate in sedge meadows include Lake Sedge (*C. lacustris*), Hairy Fruited Lake Sedge (*C. trichocarpa*), and Woolly Sedge (*C. pellita*), all of which spread by rhizomes. It is not uncommon to find a



Lake Sedge
(*Carex lacustris*)

dozen or more species in a well developed sedge meadow.

Sedge meadows are a crucial habitat for a variety of rare or declining wildlife, including Massasauga rattlesnakes, numerous dragonflies, ribbon snakes, and grassland birds such as the Bobolink, Northern Harrier and the aptly named Sedge Wren.

Many wetland sedges are prolific seed producers, providing food for songbirds, waterfowl and small mammals. Several species of butterflies utilize sedges as their larval food plants, including Eyed Browns, several skippers, and the federally endangered Mitchell's Satyr. Sedge mead-



Hop Sedge
(*Carex lupulina*)

ows are often replete with an abundance of nectar-bearing composites such as Asters, Goldenrods, and Joe-Pye Weeds, giving this habitat dual importance for butterflies.

Some of our most common and adaptable sedges often take up residence in moist old fields and roadside ditches. Fox Sedge

(*C. vulpinoidea*) is perhaps the best known, sporting a dense clump of fine, dark green foliage and plentiful brown seedheads. Other species in these habitats include Meadow Sedge (*C. granularis*), Crested Sedge (*C. cristatella*), Bristly Cattail Sedge (*C. frankii*), and Awl-Fruited Sedge (*C. stipata*). Together, these species help form an important

early successional plant community in wet areas.



Palm Sedge
(*Carex muskingumensis*)

Sedges . . . continued on page 9

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We welcome opposing viewpoints.

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The mission of the Indiana Native Plant and Wildflower Society is to promote the appreciation, preservation, conservation, utilization and scientific study of the flora native to Indiana and to educate the public about the values, beauty, diversity and environmental importance of indigenous vegetation.

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President's Message

by Ruth Ann Ingraham

In December I sat before this computer in my upstairs home office and composed my president's message for the winter issue of our INPAWS newsletter. I wrote with affection about this sappy organization—one which is healthy, fresh, and vigorous. My bias was showing.

So perhaps I should not have been surprised a week ago when I opened a letter from the Indiana Department of Natural Resources and read the following:

"Dear Ms. Ingraham and INPAWS Members:

"I am writing to congratulate you on being awarded an honorable mention in the DNR's annual conservation awards selection. You were nominated by DNR staff as one of Indiana's most active and successful conservationists of the past year."

"Sincerely, Gary Doxtater,
Director, DNR Division of
Fish and Wildlife"

But I was totally surprised—and elated.

Last August when I wrote for the fall issue of this newsletter, football was in the air and I was inspired to write about team effort. In the final paragraph I wrote that INPAWS had enumerated simple ways that we as individuals can make a difference in our environment. Then I added that individuals teaming together may be formidable and will achieve many goals.

So, buoyed by recognition from our peers and considering the caliber of the INPAWS team of individual men and women, we will continue our well established, successful functions and strive to achieve the multiple goals we've set for 1999 as well:

- Publish the eagerly awaited *Native Plant Source Book*.
- Publish two brochures, *Invasive Plants in Indiana* and *Landscaping with Native Plants in Indiana*.
- Establish our second chapter, this one in the Greater Tippecanoe County Region.
- Consider further Indiana's State Flower, presently the peony introduced from China.
- Establish a native plant demonstration garden in a public space.
- Create a fourth-grade curriculum on native plants.

The 1999 year began on a roll when, thanks to your Board of Directors, I was tapped to attend a *Native Plant Conservation Initiative Conference* at the *Lady Bird Johnson Wildflower Center* in Austin, Texas. The experience was outstanding.

Returning to the team metaphor, INPAWS, as a member of the NPCI, can hope to have an impact at the national and even international level. Formed in 1994, the Native Plant Conservation Initiative is a consortium of ten federal government agencies and, now, over 130 non-federal Cooperators which represent a variety of disciplines within

the conservation field. Included are biologists, botanists, habitat preservationists, horticulturists, resource management consultants, soil scientists, special interest clubs, non-profit organizations, native plant societies, concerned citizens, nature lovers, and gardeners. Members and cooperators work collectively to solve the problems of native plant extinction and native habitat restoration, ensuring the preservation of our ecosystem.

On the closing day of the conference attendees shared a meal with Lady Bird Johnson and Secretary of Interior Bruce Babbitt who on behalf of NPCI presented Mrs. Johnson with a lifetime achievement award for conservation. Mrs. Johnson's straightforward message has been "We should appreciate the God-given beauty of our country." In keeping with her philosophy, she founded the wildflower center which bears her name and which promotes the use of native plants in landscaping.

Secretary Babbitt's words were impassioned and many of us were deeply moved. For me his most stirring suggestion was that we turn from the European gardening model and look to the American landscape for our inspiration—to the woodlands, the wetlands, the grasslands, the deserts. Right on.



The Basic Structure of a Flower

by Dr. Rebecca Dolan

Ever wish you could take a college-level botany class? Wish you had paid more attention if you did? The *Botany 101* column is your chance. In every issue I will present material as it would be presented in a botany class here at Butler University.

We'll start by examining the basic structure of a flower, how pollination and fertilization occur, and the structure of the resulting seed.

A generalized flower:

Flower parts occur in a standard arrangement of 4 whorls around the flower stem, or **pedicel** or **peduncle**. The outermost whorl is the **calyx**. The

job of the calyx is to protect the developing flower. The calyx is usually green and its separate parts (**sepals**) are what we would recognize as the outside covering of a bud, as in a rose. As the flower opens, the sepals are pushed apart by the petals.

The whorl of **petals** is collectively called the **corolla** (hence the name of that flower catalog you may receive called *Calyx and Corolla*). Petals are usually bright-colored to attract pollinators to visit flowers.

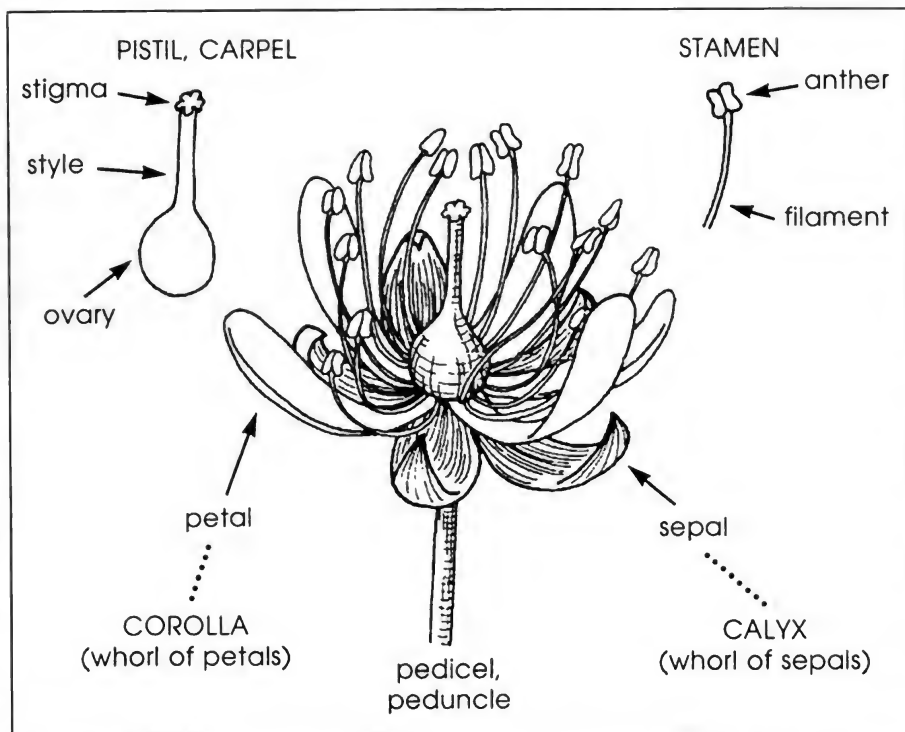
Inside the petals, the next whorl consists of the male parts of the flowers, the **stamens**. The stamen's

job is to make pollen. Tiny, microscopic pollen grains carry sperm from flower to flower. Yes, plants have sperm (more on that later). Stamens have two components: **filaments** and **anthers**. **Filaments** are thread-like structures like the fila-

the flower is the **ovary**, where eggs are borne.

All these structures are indicated in the wonderful illustration provided by INPAWS member Jan Glimn-Lacy. Now, this is a generalized

flower. In nature, there are many variations on the general theme. Some plants have separate sexes, so that an individual plant bears only flowers with male (stamens) or female (carpels), parts, not both. Some flowers have colorful sepals, some have no petals, some have elaborate sta-



ments in a light bulb, that support the anthers out from the flower base. The pollen grains are produced in the sac-like **anthers**, which open in intricate ways to release pollen.

Finally, a generalized flower would also have female parts as the center whorl. Collectively, these are known as the **pistil** or **carpel**. Like stamens, they are made of parts: the **style** extends from the center of the flower and supports the **stigma**, the sticky surface on which the pollen adheres during pollination. At the base of the carpel in the center of

stamens that look like petals. Different species have different numbers of parts in each whorl. For example, a flower might have 5 sepals, 5 petals, 5 stamens and 5 carpels. Another might have 5 sepals, 8-10 petals, numerous stamens and fused carpels.

Next issue: how the pollen gets to the stigma, how the sperm gets to the egg, and how a seed is formed.

Dr. Rebecca Dolan is Director of the Friesner Herbarium at Butler University and an INPAWS member.

Illustration by Jan Glimn-Lacy.

HOW MUCH NATURAL AREA PROTECTION SHOULD INDIANA HAVE?

by Ted Harris, Conservation Committee Chairman

The answer depends on what we hope to accomplish. I will contrast two very different perspectives on this subject.

The Utilitarian Vision

In this view nature is a resource, supplying raw materials and economic opportunities. For example, natural areas are prime residential sites. The soil supports agriculture. Trees furnish fibers. Rivers provide recreation, water for manufacturing, and channels for sewage disposal. Some wild animals are good for sportsmen. The rest are mostly nuisances. Some wildflowers are good for herbal remedies. The rest are mostly weeds.

Public parks have some utility, but not much. Nature preserves have no utility at all. They just lock up resources that should be used to fuel jobs and profits. Property rights outweigh our responsibilities to future generations. Free markets provide the best paths to efficient utilization of nature. Public lands should be privatized. We have a manifest destiny to tame the last scraps of wilderness and transform them for productive uses.

The utilitarian vision cares only "What good is it to us now?" It would probably answer this column's question by saying "very little, if any, natural area protection is needed."

The Biocentric Vision

In this view we feel remorse for what we have already done to the natural landscape and to ecological processes. If "rights" are a real thing and we have them, then plants and animals have them also.

Mowing, plowing and paving are unnatural acts. Sending a bulldozer into a woods to carve residential streets kills thousands of small plants and animals. It is as morally bankrupt as driving a tank through a day care center full of kids.

Mining, grazing, logging and much development are characterized by greedy motives and shortsightedness. Many politicians respond principally to corporate lobbying and contributions. Nature has no voice, no vote, and no legal standing of its own.

A biocentrist would assert that half to two thirds of Indiana should be plenty for just one species, our human species. The other one third to one half should be restored to pre-settlement conditions, then protected and connected by wildlife corridors to similar areas in other states. All native species and ecosystem types should be represented in these reserves; and the reserves should be large enough to ensure genetic viability and resistance to disturbances. Extirpated species should be returned, including the large carnivores that keep natural systems healthy. A goal would be to **forever** allow species to migrate, interact and evolve as they have for millions of years. Our highest moral obligation is to defend the diversity of life on earth.

Where Do We Stand and What Direction Should We Take?

The author freely admits his bias. He has both feet firmly planted in the biocentrist camp. He acknowledges that the utilitarians' victory is

ninety percent complete. Especially in the northern half of Indiana, our natural areas are virtual postage stamps, an archipelago of habitat islands. They have been fragmented by roads and development and corrupted by hundreds of exotic species.

Today, many people, especially those who are members of organizations like INPAWS, realize that things aren't right. However, apathy still predominates. It is easier to feel sympathy for nature and sorry for ourselves than it is to become active. Time is **not** on our side. Healthy native plant communities, a foundation for healthy ecosystems, may not be around Indiana a hundred years from now, much less a thousand years or a million, unless we change our direction soon. The most productive approach to preserving biodiversity comes from protecting, restoring and connecting really large natural areas. This is what we should strive to do.

You are fortunate to be alive at exactly the right time in our earth's history when your help is most needed. Please don't waste your opportunity.

Ted welcomes your comments and ideas. You can email him at tharris@tctc.com telephone him at 765-362-1509 or write to him at 1120 Ridgeway Drive Crawfordsville, IN 47933. Thanks.



M U L T I F L O R A E



*Open House
Sunday, April 11
1 to 4 PM*

*at the home of
Carolyn and Peter Harstad
5952 Lieber Road, Indianapolis.*

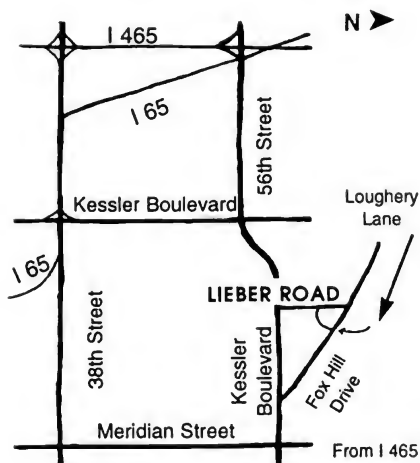
Tributes to Juanita at 2 PM.

*Please bring an appetizer or
dessert to share.*

*Carolyn Harstad
317-257-9452 • email
pharstad@topaz.iupui.edu*

Park on Loughery Lane.

*Lieber Road, on the north side of
Indianapolis, is located between
Kessler and Fox Hill.*



DNR Nature Preserves 1999 Field Days

The popular Nature Preserve Field Trips are back! No registration required. For more details call Division of Nature Preserves at (317) 232-4052, or write to the office:

402 W. Washington St., Rm W267,
Indianapolis, IN 46204.

Saturday, May 1, 9 to 10:30 AM

Fort Harrison State Park (Marion Co.). Celebrate Mayday with a wildflower hike through one of Marion County's finest remaining natural areas. Meeting Site: Walnut Plantation Parking Lot in Fort Harrison State Park. NOTE: There will be a \$2 per car entrance fee (\$5 for out-of-state vehicles) into the park. *Hike Leaders: Tom Swinford and Cliff Chapman.*

Saturday, May 22, 10 AM to 1 PM

Potawatomi Nature Preserve in Pokagon State Park & McClure Nature Preserve (Steuben Co.). Pokagon is a diverse park with beautiful woods and wetlands. We will see deer-damage recovery, Lake Lonidaw, high-quality fens, marsh and more! Meeting Site: Toboggan Slide Parking Lot in Pokagon State Park. NOTE: There will be a \$2 per car entrance fee (\$5 for out-of-state-vehicles) into the park. *Hike Leaders: Fred Wooley and Rich Dunbar.*

Saturday, June 5, 8 to 11 AM

Birds of Beaver Lake & Conrad Savanna (Newton Co.). Beaver Lake, a 640-acre nature preserve administered by the DNR's Division of Fish and Wildlife, is a popular destination for birders. Conrad Savanna consists of 300 acres of oak savanna. Meeting Site: Go 3 miles north of Enos on U.S. 41, then east 1 mile on Co. Rd. 400N, and north 1 mile on Co. Rd. 200W. Park along east side of road next to Beaver Lake.

Hike Leaders: Cloyce Hedge, Roger Hedge, and Tom Post.

Saturday, July 17

Mosquito Creek Nature Preserve, Harrison County, details to come.

Speakers Bureau

Byron Torke is assisting us in enlarging the slide collection of native plants that we have available for use in programs given by the speakers bureau. Ruth Ann Ingraham is donating slides her parents took of wildflowers. Thanks to both Ruth Ann and Byron!! The bureau can use any good-quality slides you wish to share with us. Just send them to Colletta.

Programs slated for 1999, as of this newsletter printing:

Wander Indiana Wildflowers (flowers spring-fall) given at Avon Township library and at the Hendricks County Master Gardeners Garden Show by Colletta Kosiba.

Landscaping with Native Plants to the Cultivator Garden Club by Kris Medic.

Non-Native Invasive Plants to Fall Creek Garden Club by Ellen Jacquart.

The Speakers Bureau always welcomes new speakers to add to our list. Could you do one or two programs a year for us to help educate the public and spread the good work of our great organization?

Contact Colletta:
5430 N County Rd 600 E
Brownsburg, IN 46112-8941
317-852-5973



Perigynium of
Shining Bur Sedge
(*Carex intumescens*)

LETTER TO THE EDITOR

Thanks for Art Hopkins' article on the American Chestnut tree.

INPAWS members Marilyn and Charles Spurgeon are dedicated members of the Indiana Nut Growers Association. Last fall Marilyn presented me with a gift of freshly harvested chestnuts. She described her cooking method using a microwave oven. I tried, tasted and am now hooked on these nuts. The chestnuts available here in some markets are imported from Europe and don't compare.

With that delicious memory in mind, I support Art's suggestion that we donate to the American Chestnut Foundation that works to develop disease-resistant trees. Let's hear it for our "megaflora."

Ruth Ann Ingraham

Big Walnut Tree-Planting Work Day

The Nature Conservancy is planning a tree planting day **Saturday, April 10**, at Big Walnut Nature Preserve. This preserve now includes 2,000 acres of forested land, one of the largest forests left in the Central Tillplain. By planting a variety of tree species in some old agricultural fields adjacent to the forest, we can better buffer the preserve and provide just that much more future forest habitat. Please bring a lunch and join us at 10 am April 10 for a day of planting and fun! Directions: Taking U.S. 36, go 2 miles west of Groveland to Co. Rd. 500E, turn north/right, continue north for 1 mile to Co. Rd. 800N, turn east/right, take first left (500E), continue north for 1 mile to the "T" intersection (900N), turn west/left, go approximately 1/3 mile. You will pass the Coffman Cemetery; look for the barn and TNC trucks on your left.



NATURE WALKS AT BUTLER UNIVERSITY

Join Dr. Rebecca Dolan for nature walks on the **second Tuesday** of each month at noon:

Looking at Wildflowers (ah, spring!)

April 13
May 11
June 8

Meet behind Gallahue Hall on the Butler University campus near the greenhouse. Walks will last about 45 minutes. There is no charge and all are welcome.

If you would like to receive a monthly reminder of the walk, or wish to be dropped from the reminder list, please call Dr. Dolan at 317-940-9413, or email rdolan@butler.edu.

Web Resources for Native Plants First INPAWS Program of 1999

Twelve INPAWS members and guests met at the Ball State University library on Saturday, February 20, to receive an excellent presentation on internet navigating.

Each of us had a hands-on station from which to practice the tips shown live on a projection screen by Ball State instructor Jennifer Dörner.

Search techniques were explained, and practiced, and although most all had previous web use experience, the tips will certainly improve our usage of search engines and subject archives.

(See INPAWS website for some links. Ed.)

Thanks are due to Kevin Tungesvick and his committee, Susan and John Taylor who brought us this fine program.

Rolland Kontak



Kevin Tungesvick

. new links !!! . .

www.inpaws.org

Visit our website for news and information about INPAWS and native plant issues, as well as links to a wealth of like-minded organizations.

We would like to update our site with **your** news, information, comments, ideas, opinions, suggestions. In short, anything of interest to all concerned with preserving native plants and their habitats.

Please email Anne Wilson
wilson@hsonline.net

"Our Work Has Never Been More Important"

Recent assessments of the status of native plants in North America and elsewhere in the world underscore the need for heightened awareness—and action. In April 1998, the International Union for the Conservation of Nature (IUCN) reported that today 12.5 percent of the world's plant species are threatened with extinction. One other estimate indicates that 2,000 of the 18,000 native plant species in the United States are at risk of extinction, with as many as 700 of these plants possibly disappearing in the next ten years.

These losses are largely the result of habitat destruction (especially from the rapid growth of urban and suburban developments in the countryside) and the spread of aggressive non-native species that are displacing many native plants. If these assessments prove correct, or we lose even just a portion of these plants over the next half-century, the richness, beauty, and ecological integrity of our continent will be seriously diminished.

*Robert Glass Breunig, Ph.D.,
Director of the Lady Bird Johnson
Wildflower Center*

Excerpted from *Native Plants*, a quarterly publication of the Lady Bird Johnson Wildflower Center in Austin, Texas, Volume 16 Number 1, Winter 1999,

on the web at
www.wildflower.org

(Dr. Breunig was the keynote speaker at INPAWS fifth annual meeting, November 14, 1998.)

Membership for 1999

As a new year begins for INPAWS, this is a gentle reminder that if you haven't paid your 1999 dues, now is the time. This organization has a lot to offer its members and you don't want to miss out on all the activities planned for 1999. We need to get the word out about INPAWS and we need your help.

Several weeks ago I received the following letter prompted by a phone call and I quote,

"Thank you so much for your prompt and friendly response to my questions about your organization. I received the newsletter and I'm sending my check for membership. INPAWS is what I've been searching for—an Indiana resource connection—for about two years. Thank goodness for your listing in Wild Gardens magazine. I have looked in three libraries, the resource listings in the back of bookstore books, the Flower and Patio Show, as well as any other source. I know there have to be others like me out there searching and I am certainly spreading the word to my extension agent, fellow gardeners and libraries in my area."

Dee Pring, Markleville, IN

We need to get the word out about INPAWS. There are many potential members in Indiana just like Dee—SEARCHING. Will you help? Katrina Vollmer, Membership.

Contact Katrina at
KatrinaJo@iquest.net

We Need Your Best Photos of Our Worst Plants!

The Invasives Committee is moving full steam ahead to produce two brochures on invasive plants in Indiana, and we need color photos of these noxious weeds to feature in the first brochure. Examples include: **Amur Honeysuckle, Purple Loosestrife, Garlic Mustard, Japanese Honeysuckle, Reed Canary Grass, Common Reed, Glossy Buckthorn, Japanese Stilt Grass, and Multiflora Rose.** The plant in the photo should be easy to identify. We would also like photos showing areas dominated by invasive species, for instance, a forest understory that is nothing but garlic mustard. Color slides or prints are preferred. They will not be returned unless it is specifically requested. The photographer will receive credit in the brochure.

Please send your photos to
Ellen Jacquart at
The Nature Conservancy,
1330 W. 38th Street,
Indianapolis, IN, 46208.

If you have questions contact her at
317-923-7547 or
ejacquart@tnc.org.



Glossy Buckthorn
(*Rhamnus frangula*)

Wet woodlands provide habitat for some of our best known and most ornamental sedges. Burr Sedge (*C. grayii*) with a spiny mace-like seed head is easily cultivated in moist soil in sun or shade. Hop Sedge (*C. lupulina*) has an elongate but otherwise similar seedhead. Both species are common in flatwoods and feature greatly inflated perigynia which enclose a relatively small seed.

Palm Sedge (*C. musk- ingumensis*) is widely used for massing in moist shady areas. Its deep green shiny foliage and long pointed seedheads give it a season-long attractive appearance. Found throughout the state, it is particularly abundant in extreme southwest Indiana where it may easily be seen in flatwoods such as those at Twin Swamps Nature Preserve.

Many of our most attractive woodland sedges are broadleaf species in the laxiflora section of *Carex*. Plantain-leaf Sedge (*C. plantaginea*) has strap-like foliage about an inch wide and up to a foot long. In Indiana it occurs primarily in deep sandstone ravines, often associated with Hemlock (*Tsuga canadensis*). It may be seen in Shades and Turkey Run State Parks. Related species with broad leaves such as Blunt-Scaled Wood Sedge (*C. albursina*) and Beech Wood Sedge (*C. laxiflora*) can be found in rich woods throughout the state.

Clump-forming sedges stabilize the soil, provide season-long interest, and complement the native wild-

flowers. In mesic soils, sedges such as Grass Sedge (*C. jamesii*) and Straight-Styled Wood Sedge (*C. radiata*) are attractive in a woodland garden. In fact Grass Sedge often persists in shady lawns where development has occurred in wooded areas.

These species form clumps about six inches high and wide, resembling a small ornamental grass. They are especially attractive when planted with native wildflowers such as Wild Blue Phlox (*Phlox divaricata*), Bloodroot (*Sanguinaria canadensis*), and Trout Lily (*Erythronium spp*) to add contrasting color and texture.

Fine-textured Oak Sedge or Pennsylvania Sedge

(*Carex pennsylvanica*) is a rhizomatous species that creates extensive patches in dry oak woods in northern and central Indiana. It is especially abundant in sand savannas of northwest Indiana, where it forms the dominant groundcover. Commonly available in the native nursery trade, it is best adapted to filtered shade and sharply drained soil.

Sedges are often erroneously excluded from prairie restorations, when in fact, they fill an important early-season niche in the prairie. Since they are cool-season plants which accomplish most of their growth before the warm-season prairie grasses begin to elongate, they provide early season cover, and competition for exotic cool-season grasses.

Perhaps the best-known sedge of well-drained prairies is Copper Shouldered Oval Sedge (*C. bicknellii*) which is common in upland prairies in northern Indiana. Other characteristic sedges of prairies include Yellow Fox Sedge (*C. annectans*) and Mead's Stiff Sedge (*C. meadii*). As a prairie becomes wetter, sedge diversity and density increase until the wet prairie grades into a sedge meadow.

In cultivation, sedges are nearly indestructible, thriving through drought, flood and other extreme conditions. As our most diverse native plant genus, they should be a vital portion of any restoration, as they combine with grasses to make up the graminoid component vital to the stability of herbaceous plant communities.

Their interesting forms and textures have a place in every native plant garden. Finally, although initially intimidating, sedge identification is a very rewarding pastime that will greatly enhance any naturalist's enjoyment of our native plant communities.

Kevin Tunesvick is INPAWS Vice President, Program Chairman, and works for Spence Nursery in Muncie. He will lead a hike at Clifty Falls State Park, Madison, on March 14 (see page 16) and will know the name of every single plant you will see!



Fox Sedge
(*Carex vulpinoidea*)



Oak Sedge
(*Carex pennsylvanica*)

Sedges have Edges . . . Gardening with Sedges

by Carolyn Harstad

Grasses have become popular landscaping plants, but most people aren't familiar with a close lookalike—the sedges. Like grasses, sedges can be an effective addition to the landscape. Those species with creeping or running rhizomatous roots are better suited for ground cover, erosion control, or to restore a wetland area. If you want a specimen plant for your garden, choose a native sedge with a clumping growth habit, since clump-forming varieties stay where you put them, only increasing in girth.

Often mistaken for grass, sedges are easy to distinguish by applying the little saying, "Sedges have edges, but rushes are round, grasses are hollow and rush all around." Run your thumb and forefinger up and down the flowering stem, known as a culm, and you will find sedge culms sharply triangular, rather than round like grass stems. Unlike grasses, sedges do not have joints in their culms. The culms of sedges are solid, while most grass culms are hollow.

Plantain-leaved Sedge (*C. plantaginea*) is also known as Seersucker Sedge. This clumping sedge has broad, heavily-veined bright green leaves that can be up to one inch wide. It grows one to one



Plantain-leaved Sedge
(*Carex plantaginea*)

and a half feet tall and equally as wide. Arching flower spikes with handsome, nearly black inflorescences emerge before the foliage in early spring. Portions of this sedge, including the base of the flowering stem, are a rich burgundy-red. 'Dr. Richard Lighty' is a cultivar that is almost identical to the species, except that it is smaller, maturing at only 12 inches tall.

Plant *C. plantaginea* in humus-rich, consistently moist, well-drained soil in a shady site. It will tolerate drier conditions if temperatures are moderate. It thrives near ponds or garden pools, and is attractive when interspersed with other woodland plants such as

Appendaged Waterleaf, Spring Beauty, and Cut-leaved Toothwort.

Another good choice for the home garden, Carey's Wood Sedge (*C. careyana*) is similar to Plantain-leaved Sedge, but is slightly taller. This bright green sedge grows among the woodland wildflowers typically found in moist, rich Beech-Maple forests.

Five to ten inflated spikes radiate out in all directions on the striking one-inch

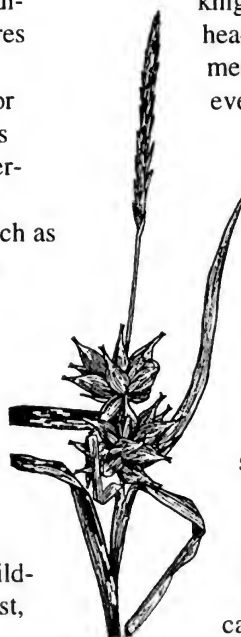
wide, ball-like seedheads of Shining Bur Sedge (*Carex intumescens*). This little clumping sedge grows one to two and a half feet tall, prefers moist, acidic soil, and makes a nice accent in the garden.

Another sedge with fascinating seedheads is *C. grayii* commonly known as Gray's Sedge, Burr Sedge or Morning Star Sedge. This unique, semi-evergreen sedge grows about two feet tall. Particularly attractive as an accent plant in a garden, it can also be massed or used as a ground cover, and colonizes readily. Just don't let it dry out! Its distinctive, rounded yellow-green seedhead resembles the

spiked mace that Medieval knights twirled above their heads in jousting tournaments. These seedheads eventually develop a rich

brown color and add interest to a dried floral arrangement.

Plant a clump where you can see it from inside the house on a cold winter's day, and enjoy the interesting shadows created by the seedheads as they stand on stiff stems above the leaves. The narrow, light-green leaves of Gray's Sedge can become two to three feet long, but generally remain shorter in hotter climates. This sedge has a narrow



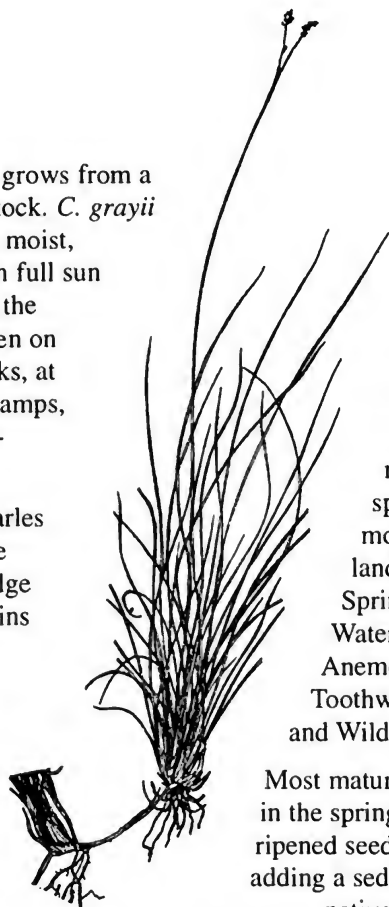
Shining Bur Sedge
(*Carex intumescens*)

upright form and grows from a short, thick rootstock. *C. grayii* likes consistently moist, humus-rich soil in full sun or light shade. In the wild, it can be seen on the banks of creeks, at the borders of swamps, and in rich woodlands.

According to Charles Deam, diminutive Black-seeded Sedge (*C. eburnea*) retains its fruit longer than any of our other species. It generally grows less than seven inches tall, forming symmetrical, twelve-inch-wide clumps of soft, exceedingly fine, wire-

like green foliage. It grows from a rhizomatous rootstock, and is typically found amid woodland plants like Bloodroot, Hepatica, and Mayapple. Black-seeded Sedge, also called Ivory Sedge, is a perfect choice to snuggle in close to the base of a tree, tuck into a rock garden, or to use as a ground cover in a small area. Plant it in sun or partial shade in well-drained soil. This particular sedge prefers an alkaline soil that is dry, sandy, or rocky, but it has reportedly been grown successfully in neutral or acidic soils as well.

Grass Sedge (*C. jamesii*) resembles lily turf and is effective as a border



Black-Seeded Sedge
(*Carex eburnea*)

near a path, sidewalk, or driveway. It has soft, narrow, dark green leaves that rise above the insignificant flowering stalks. Plant it in humus-rich well-drained soil with a neutral pH and intersperse some of the common Beech-Maple woodland wildflowers, like Spring Beauty, Virginia Waterleaf, False Rue Anemone, Cut-leaved Toothwort, Virginia Bluebells and Wild Blue Phlox.

Most mature sedges can be divided in the spring, or you can plant ripened seed in the fall. Consider adding a sedge or two to your native plant garden and try to learn more about these interesting plants!

Sources

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The Morton Arboretum, Lisle, Ill.
The Indiana Academy of Science, 1994.

Carolyn Harstad is a founder and former president of INPAWS, current newsletter editor, popular garden lecturer, nature photographer, certified Landscape Design Critic, and author of the book *Gardening with Native Plants and Wildflowers in the Lower Midwest*, to be published in September by Indiana University Press.

The Other Dogwoods

by Barbara Wilde

Say "dogwood" and most of us see in our mind's eye the ethereal drifts of white blossoms in our May woodlands. When you add red fall foliage color, shiny scarlet fruits, shade tolerance, patio-tree stature, horizontal branch structure, and handsome bark to its breathtaking floral display, you must admit that flowering dogwood (*Cornus florida*) is the undisputed queen of the genus. What many gardeners don't realize is that there are several less glamorous, but wonderfully stalwart and useful species native to Indiana. All but two of these are shrubs.

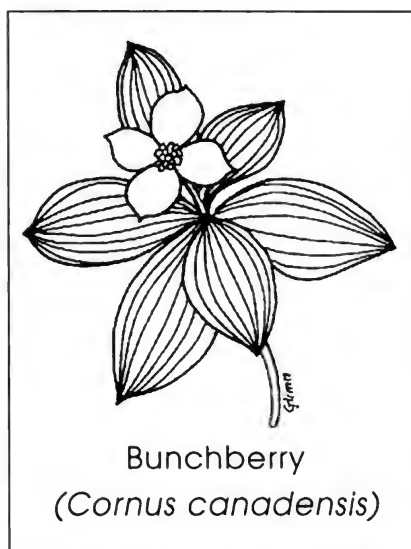
Redosier dogwood (*Cornus sericea*)

Redosier is probably the best-known and most widely planted of our native shrub dogwoods. If you want to stick with natives, make sure you don't confuse this species with Tatarian dogwood (*C. alba*) which is its Eurasian counterpart. Many cultivars of both these species are available in the trade. Native to moist and swampy areas of Indiana, redosier is more wet-tolerant and colonizing in habit than its European cousin.

At six to nine feet high and wider than tall, redosier is a robust shrub. Its most distinguishing feature is its colorful deep red bark which lights up the winter landscape. Redosier blooms with flat clusters of creamy flowers in late May and early June. These are followed by fruits which develop slowly over the summer and ripen white in late summer through early fall. You scarcely get a chance to notice the fruit display because the birds immediately strip them. It's the old trade-off between fruits for landscape color and fruits for attracting birds. But most of us native plant lovers are bird lovers as well,

and are only too happy to host feasting flocks. Fall foliage is variable with this species, but some individuals do color up to a pleasing purplish-red.

From a landscape point of view, the main attraction here is the colorful stem bark. Many selections have



been made that are superior in this department. My favorite is 'Cardinal,' which has unique, brilliant coral-colored bark over the wintertime only. In spring, its stems turn lime green. But there's so much else going on in the summer landscape that I don't mind its lack of color then. And the brightness of its orangey-rose winter bark is much more cheering than the deep, dull oxblood of the species. 'Flaviramea' is a widely available cultivar with chartreuse-yellow stems year-round. 'Silver and Gold' has yellow stems and variegated leaves with creamy margins.

Like all our native shrub dogwoods, redosier is not particular as to soil, which is a real boon to those of us

with newly constructed homes and less-than-optimal topsoil. It makes a terrific and fast-growing screen between you and the neighbors. And because of its suckering, stoloniferous habit and rapid, vigorous growth, redosier makes an excellent large-scale groundcover and erosion-control plant. It flourishes best in full sun. Annual early spring removal of one-third of the oldest stems at their bases will ensure a flush of brightly colored new growth.

Silky dogwood (*Cornus amomum*)

This low-key shrub is almost unknown to gardeners but deserving of wider planting. When you need a screening plant in a shady spot where few other shrubs will flourish, consider planting silky dogwood. Similar in size to redosier, it has a more graceful, billowy, irregular habit. Its flowers are similar in look and bloom time to those of redosier, but the fruits are a treasure unknown to most gardeners. These ripen in late summer to various shades of turquoise and steely blue, reminiscent in their beauty of those of porcelain vine. Should you get to them before the birds do, the fruited branches make beautiful additions to indoor arrangements, with their jewel-like berries arrayed on rosy-red pedicels.

As is apparent by now, silky dogwood is a great bird attractor. In the landscape, it makes a graceful understory shrub, especially at water's edge. On the other hand, sharing in the adaptability of our native shrub dogwoods, it will thrive in more open, sunny locations and drier soils. Silky dogwood is native to low, wet woodlands in Indiana.

Gray dogwood (*Cornus racemosa*)

Gray dogwood is the brawny fellow of the three major native shrubby species. Growing ten to fifteen feet tall, it has almost indefinable spread because of its vigorously suckering habit. This characteristic makes gray dogwood a wonderful erosion-control plant, large-scale groundcover, or quick large-scale screening or massing plant. It is unsuitable, however, for small-scale landscapes.

The flowers of gray dogwood are similar to those of the other two species, but borne more profusely at the tip of every stem. Its hour of glory arrives in September, when its leaves color up to a deep purple-red earlier than those of just about any other shrub. The fall foliage provides a dramatic backdrop for the showy clusters of ivory fruits which are relished by over a hundred bird species. I know that most readers must have noticed silky dogwood at this stage in its life cycle along rural roadsides and even within city limits. After the birds strip the berries, the showy, rose-red pedicels (fruit stems) at the tips of the gray twigs continue the season of interest well into the winter.

It's hard to beat gray dogwood for adaptability. Sun or shade, moist or dry, and just about any old soil will do. In a world of landscape plants which often require extensive soil preparation to do their best, such vigor is not to be sneered at. If you need a shrub for a difficult area where there's plenty of room, gray dogwood can be just the ticket. And with no disease or insect problems, or pruning requirements, it's pretty much a plant-it-and-forget-it shrub, a boon to those of us who have better things to do than fuss over our shrub borders.

Two other native dogwoods are of note. **Pagoda dogwood** (*Cornus alternifolia*) is unusual among dog-

woods in that—as its Latin name suggests—its leaves are arranged alternately along the stems. All other dogwoods (save one) have opposite leaves. Pagoda dogwood is a real connoisseur's plant. When you learn to appreciate its quiet beauty and beautiful, horizontal branch architecture (hence its common name), you can number yourself among the horticulturally astute (aka plant snobs).

This small tree may be grown multi- or single-stemmed. It is relatively slow-growing, ultimately reaching fifteen to twenty-five feet in height under optimal conditions. And while the triumvirate of shrubby species above are so very widely adaptable, pagoda dogwood is allied with flowering dogwood in its preference for moist, acid, partly shaded sites. Its refined qualities are best appreciated at close range in an intimate setting. It is a lovely patio tree, and equally attractive when placed so that its horizontal branches can soften the angles of a building or wall.

Pagoda dogwood has flower clusters that resemble those of the previous three species, and like them, it blooms in late spring to early summer. The flowers are followed by a pretty fruit display, with green, pink, plum, and deep blue berries presented simultaneously in open clusters. Like those of gray dogwood, the fruits are arrayed on attractive rosy pedicels, and are rapidly gobbled by birds. Fall color is usually a winey purple.

The final member of the native dogwood tribe is a rare plant in Indiana, and notoriously difficult in the garden. **Bunchberry** (*Cornus canadensis*) is our only herbaceous species, growing only three to nine inches high. For those who can manage to meet its fastidious growth requirements, it is one of the loveliest groundcovers in existence.

Bunchberry joins pagoda dogwood in having alternately arrayed leaves.

These are a glossy, deep forest green and turn incredible shades of burgundy red in fall. And its flowers! Just imagine the blossoms of flowering dogwood, only slightly smaller and less blowsy, with bracts a bit more pointed, poised like stars over that rich green foliage. Finally, in autumn the plant is adorned with jewel-like clusters of shiny scarlet fruits (hence the name "bunchberry"). Truly this plant seems to hail from an elfen forest.

Should you decide to try growing it, give bunchberry distinctly acid, moist, but well-drained soil in a cool location. This plant of the Northern Kingdom hates the heat. Beneath rhododendrons or pines is an excellent spot, as its cultural requirements are similar. But avoid spots in deep, dark shade. Bunchberry is best transplanted as a sod cut from an existing planting, but with care and attention to perfect environment, a container-grown plant can be coaxed into staying around.

From stalwart to persnickety, the dogwood tribe offers candidates for a wide range of garden situations. Whether for massing, screening, erosion control, specimen, or groundcover, use our "other" dogwoods to feast your eyes as well as the birds.

Barbara Wilde is a landscape designer, horticulturist, educator, and writer in residence at Mark M. Holeman, Inc. She is the regular gardening columnist for Indianapolis Woman magazine, and has written for Horticulture and American Nurseryman magazines. Coauthor of several books for Rodale Press, her garden designs will be featured in the upcoming Rodale book, Perennials for Every Purpose.

Illustration by Jan Glimn-Lacy.

Eagle Creek Park Nature Center, Indianapolis – Spring Adult Education Programs – *for more information or to register, call 317-327-7148*

Wildflower Identification

with Becky Dolan, Ph.D., Director of the Friesner Herbarium at Butler University.

9 AM, Saturday, May 8th

Learn the secrets of wildflower identification with an expert. Becky Dolan will teach participants in the field techniques needed to identify spring wildflowers. These same tools can then be used for flowers that bloom during other seasons of the year. Rain or shine. The class will conclude at noon. Registration fee \$10.00.

Wildflower Photography

with Tom Potter, professional nature photographer.

9 AM to 4 PM, Saturday, April 17

This all-day program begins with an illustrated lecture demonstrating a variety of field techniques, equipment, and critique of participants' photos. All materials and concepts needed to create wonderful floral images will be covered. The afternoon will consist of a photo setup and then supervised field work in which all participants will take photographs of the many wildflowers blooming at this time in Eagle Creek Park. Meet at the Nature Center at 9 AM. Bring photo gear and a sack lunch. Be prepared to get your knees dirty. Registration fee \$25.00.

Wonders of the Spring Sky

with Dan Goins, Director of the Martinsville High School Astronomy Program and Planetarium.

Saturday, April 3rd, 7 to 9:30 PM, rain or stars

Explore the wonders of the spring stars and constellations, the myths that cul-

tures created about these marvelous patterns and the science that is informing us about the life and death of these magnificent stars. If the skies are cloudy, Dan has marvelous slides and stories about the heavens. Registration fee \$10.00 for adults, \$2.50 for ages 17 and under. Under age six participation is discouraged.

Bird Identification

with Tom Potter, natural history and birding tour guide with experience throughout North America, including Alaska and Costa Rica.

3 Tuesdays–April 6th, 27th and May 4th, 7 to 9 PM

Learn identification skills for the more difficult songbird groups as we prepare for the spring migration, especially for warblers, vireos, flycatchers and sparrows, with a view to adding helpful identification notes to our field guides. Registration fee \$25.00 for all three evenings.

Youth Nature Photography Workshop

with Kevin Carlsen, award-winning photographer.

Saturday, May 1st, 9 AM to Noon

Designed for young people, ages 8 to 14. Learn the basics of nature photography from one of the best. Kevin will start with an illustrated lecture and then demonstrate the field techniques used to create pleasing and inspiring photos of the natural world. Kevin will then work with each individual, covering such topics as composition, visual perspective and reading of light to create a special image. A 35mm camera and film are necessary. Registration fee \$10.00.

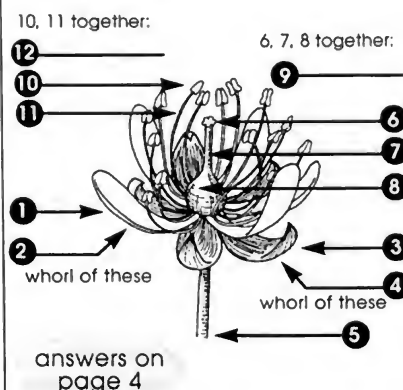
Smoky Mountain Wildflower Pilgrimage

April 20 to 25, 1999

Join naturalists Karen LaMere and Tom Potter for our annual trek to the Great Smoky Mountains to attend the 49th Annual Spring Wildflower Pilgrimage, a program of nature walks, motorcades, and photographic tours throughout the various habitats of the Park. Professional botanists from the region will help us study a variety of plant communities and habitats. Other events will include bird, geology, tree, fern, and cultural hikes and programs, all lead by regional experts. At this time of year many wildflowers will be in full bloom, including showy orchis, yellow ladyslippers, and numerous species of trillium. The trip fee includes transportation to and from Eagle Creek Park, lodging, and Pilgrimage registration. A pre-trip planning meeting will be held on Monday, April 12th, at Eagle Creek Park Nature Center at 7 PM. A \$50.00 deposit is due with your initial registration. The balance of \$425.00 is due on April 12th. The fee is based on double occupancy.

Yes, this is a quiz!

Can you name the parts of this flower?



Spring Native Plant Sale and Auction

**Saturday,
May 15, 1999**

*Burello Family
Center*
Garfield Park



- **8 AM to 9:30 AM**
donations accepted
- **10 AM**
sale begins
- **11 AM**
auction begins

*Refreshments available
INPAWS items for sale*

For more information
call Marilyn Spurgeon
317-297-1326

The spring INPAWS plant sale and auction will be held with our co-sponsor, **Garfield Park**, in its new *Burello Family Center*, 2345 Pagoda Drive. Garfield Park is located on the near southside of Indianapolis (south of Raymond Street, west of Shelby Street, north of Southern Avenue).

Share your native flowers, grasses, bushes and trees by donating them to the event. Other gardening items, books, tools, and art work are also appreciated. Plants should be potted at least two weeks prior to the sale to prevent wilting at the sale. Each plant should be properly labeled with its Latin name, if possible, or at least the common name. Donors who would like a record of their donations for tax purposes will be assigned a number to allow an appropriate statement to be sent later.

Bring your donations to the Burello Family Center between 8 and 9:30 AM to allow for proper sorting and pricing. The sale will begin at 10 AM. The more valuable or spectacular specimens will be auctioned, starting at 11 AM, by our own Rolland Kontak, who is well known for dispensing wit and valuable horticultural information during the auction. Don't miss it!

Remember that the income INPAWS has received in the past from these sales has been substantial and is used to further our causes and keep our membership dues low.

If you would like to assist with planning, or helping at the sale, or if you would like to know a source for used pots, please call Marilyn Spurgeon or email her at csपुरgeo@iupui.edu.



INDIANA NATIVE PLANT and Wildflower Society

MEMBERSHIP APPLICATION/RENEWAL

Annual dues pertain to the fiscal year January 1 - December 31. Dues paid after September 1 are applied to the following fiscal year.

☐ Student \$10 ☐ Individual \$18 ☐ Family \$25 ☐ Patron \$100 ☐ Sponsor \$250 ☐ Corporate \$500
Supporter (Additional Donation) \$ _____ Total Enclosed \$ _____

NAME _____ TELEPHONE _____
ADDRESS _____ EMAIL/FAX _____
CITY _____ STATE _____ ZIP _____
COUNTY _____ ☐ NEW ☐ RENEWAL

How did you hear about INPAWS?

3/99

GIFTS DO HELP. INPAWS donors at the *Supporter, Patron, Sponsor* and *Corporate* levels will receive special recognition. All donations above *Student, Individual* and *Family* dues are most appreciated and can aid our mission. Donations are tax-deductible to the extent provided by law.

Please complete this form and mail, along with your check made payable to:

Indiana Native Plant and Wildflower Society, or INPAWS
c/o Katrina Vollmer
3134 North Greenbriar Lane
Nashville, IN 47448

I would like information on these committees:

- | | | |
|--|--|--|
| <input type="checkbox"/> Annual Meeting | <input type="checkbox"/> Hospitality | <input type="checkbox"/> Programs/
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| <input type="checkbox"/> Auction | <input type="checkbox"/> Membership | <input type="checkbox"/> Publications |
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| <input type="checkbox"/> Other | | |

Tentative Schedule of INPAWS Activities for 1999

details to follow • Kevin Tunesvick, Program Chairman • 765-354-2775

Sunday, March 14, 1 PM

First Signs of Spring hike, Clifty Falls State Park, Madison, Indiana. Spring comes early to our Ohio River counties. Join INPAWS Vice-President Kevin Tunesvick as we explore the canyons and woods of Clifty Falls State Park for the first wildflowers of spring.

Saturday, April 10, 1 PM

Spring Wildflower Hike, Burnett Woods. Join us on a visit to this beautiful flatwoods that INPAWS helped the Central Indiana Land Trust acquire. Division of Nature Preserves Botanist Mike Homoya will lead us through the diverse wildflower community.

Saturday, April 24 and Sunday, April 25

Garlic Mustard Pull at Shades and Turkey Run State Parks. Help keep two of the most beautiful parks in

the Midwest from being overrun by invasive Garlic Mustard. Saturday will be at Shades State Park and Sunday at Turkey Run. Wildflower hikes will follow the Garlic Mustard pulls each day.

Saturday, May 15

INPAWS Native Plant Auction and Sale, Garfield Park.

Saturday, June 5, and Thursday, June 10

Work days at Garfield Park. Contact Marilyn Spurgeon, 317-297-1326, email cspurgeo@iupui.edu.

Sunday, July 18, 2 PM

Native Plant Communities on the Golf Course. Join us at Smock Golf Course to see the excellent work that Pro Jan Tellstrom has done in bringing native prairie and wetland plants to his golf course. Stay with us to carpool to other native landscaping sites.

Saturday, August 28 and Sunday, August 29

Two-day bus trip to northern Indiana. Day one will feature prairie restoration at Museums at Prophetstown, Spinn Prairie, and Kankakee Sands. Sunday will feature the Fens of Pigeon River with a variety of beautiful wildflowers.

September

Fall Plant and Seed Sale – date and location to be announced.

Saturday, October 23

Hike at Post Oak-Cedar Nature Preserve in Wyandotte Woods, Harrison County. View spectacular fall foliage and fascinating prairie glades. Join us for a picnic prior to the hike.

Saturday, November 13

Sixth Annual Meeting at the new Indiana Historical Society facility, Indianapolis. Details to come.



INDIANA NATIVE PLANT
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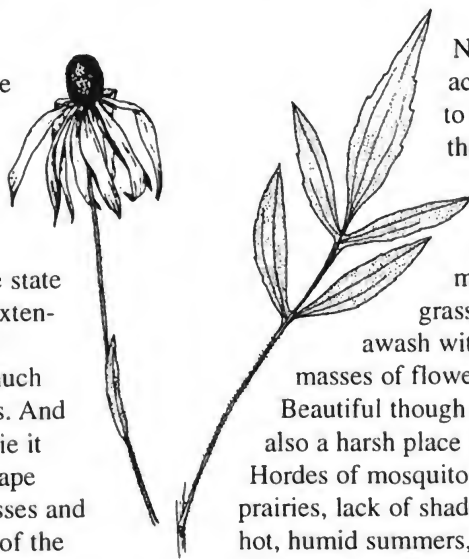
Volume 6 Number 2 • Summer 1999

NEWS

Links to a Legacy . . . Prairie Cemeteries

by Lee Casebere

As most of you know, prairies were once a part of the Indiana landscape. The vast majority of these were in the northwestern part of the state where they were extensions of the Grand Prairie covering much of northern Illinois. And what a grand prairie it was from a landscape point of view—grasses and forbs were on top of the world for mile upon mile, and open sky was all around. A few



Yellow coneflower
(*Ratibida pinnata*)

shady places were scattered here and there where oak groves dotted the uplands and cottonwoods lined the streams. But this was true prairie wilderness in all its beauty, diversity and immensity.

Modern estimates of the extent of this ecosystem in Indiana put the size at around three million acres. And even though most were confined to northwestern Indiana, small prairie inclusions were found here and there throughout the state. Even today, the presence of prairie plants in rather unlikely places is testimony to this history.

Numerous accounts testify to the beauty of the prairie landscape, where during the summer months the grassy palette was awash with color from masses of flowering forbs.

Beautiful though it was, it was also a harsh place to the pioneers. Hordes of mosquitoes on the moist prairies, lack of shade during the hot, humid summers, and the difficulty of breaking the dense prairie sod made it a difficult place to eke out a living. But the

fertile prairie soil was the very best of farmland, and the persistence of the pioneers won out in an amazingly short time. As a result, the prairies were almost completely destroyed. Remnants containing respectable amounts of the rich diversity of our prairie flora are among the very rarest of our natural resources.

Many of our remaining prairie remnants are protected either on public lands or on lands owned by conservation land trusts. These include many of the best and most well-

known remnants such as Hoosier Prairie owned by DNR's Division of Nature Preserves, Spinn Prairie owned by The Nature Conservancy, and Cressmoor Prairie owned by the Shirley Heinze Environmental Fund.

Occasionally, tiny remnants of prairie vegetation are found in other places, such as along railroad rights-of-way. Many of these old railroad beds were laid out in the late 1800's before the prairies were gone. Modern-day railroad prairies struggle to survive. Because of their long, linear shape, they have an incredible amount of "edge" where they border disturbed landscapes such as cultivated fields. Since cultivation inspires the best growth of many a pernicious weed, these

Prairie. . . continued on page 2

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narrow, linear prairies are constantly under the assault of weedy invaders. Certain of them, such as Canada thistle and wild parsnip, are formidable opponents that challenge the prairie plants for elbow room, and frequently win.

Another assault that the prairie plants must endure is the railroads' use of herbicides along their tracks. Usually these are either general herbicides that kill all vegetation, or broadleaf herbicides that don't kill grasses, but that kill pretty much everything else. In either case, the end result is that long-lived perennial prairie plants die out. Prairie plants are well known for their "slow start" in establishing themselves. After mature plants succumb to the herbicides, the infant prairie plants popping up from the seed bank lose the



Prairie phlox
(*Phlox pilosa*)

competitive battle against the quicker-to-establish weeds that are better suited to filling niches in disturbed habitats. But in spite of these setbacks, prairie plants continue to struggle for a place in the sun on the old homelace. As the struggle continues, their numbers dwindle, and fewer and fewer of the most conservative species survive. These poor survivors represent a meager testimonial to a regal landscape lost forever. A hundred years hence, will any remain?

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Yet another place where prairie plants put forth their best effort to overcome difficult odds is in old pioneer cemeteries that were established on or near original prairies.

Few of these are known, and few are allowed to flourish. Aldo Leopold was perhaps one of the first people to note that prairie plants sometimes survive in old cemeteries. In *A Sand County Almanac* he gives an account of several prairie species (including a compass plant) occupying the triangular corner of an old cemetery where the mowing equipment couldn't reach. More recently, prairie expert Dr. Bob Betz of Northeastern Illinois University raised the consciousness of mid-western prairie enthusiasts to the presence and importance of prairie remnants in pioneer cemeteries. Dr. Betz visited dozens of cemeteries in Illinois and Indiana in the 1960's trying to find remnant prairie vegetation.

Usually, the cemetery prairies that Dr. Betz discovered were being maintained to some degree by mowing. Often, this was not vigor-

Prairie . . . continued on page 3

Indiana Native Plant and Wildflower Society Newsletter
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We welcome opposing viewpoints.

Articles, letters, drawings should be sent to Carolyn Harstad, 5952 Lieber Road, Indianapolis, IN 46228.

e-mail pharstad@topaz.iupui.edu
arthop@hsonline.net
wilson@hsonline.net

The mission of the Indiana Native Plant and Wildflower Society is to promote the appreciation, preservation, conservation, utilization and scientific study of the flora native to Indiana and to educate the public about the values, beauty, diversity and environmental importance of indigenous vegetation.

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President's Message

Native Plants – the Means to an End

by Ruth Ann Ingraham

Are you inundated by masses of printed information as I am? If you're superhuman, you read it all.

I took a speed-reading class when I was a student at Broad Ripple High School here in Indianapolis. In the classroom I sat in a small, darkened booth, one of many, with a textbook on the desk before me. A narrow, horizontal beam of light moved across the lines of print and then down the page. We could increase the span of light to illuminate more words and, eventually, more lines. We could work up to paragraphs. We could also increase the rate the light moved. We checked our comprehension frequently. The objective was to train our eyes to encompass ever-increasing clusters of words at an ever-increasing pace while maintaining good comprehension.

Long ago I relapsed to my leisurely reading pace. My mind must serve as a fine filtering system as it encounters the mountain of information. It must ignore the extraneous and select materials that relate directly to what I care about. For instance, I care about biodiversity. When I find materials of this

subject, I often file them for future reference.

In a culled stack of old magazines and articles, I found what I needed for my message for this newsletter. First was a Wild Earth* magazine which describes The Wildlands Project, a concept that makes sense to me. The big thinkers behind this have drafted a blueprint for an interconnected, continental-scale system of protected wildlands linked by habitat corridors.

Then in a file folder I located an essay entitled *Gardens for the 21st Century* from the May/June 1993 issue of *Nature Conservancy*. Janet Marinelli, author and editor at the Brooklyn Botanic Garden, writes, "As wilderness shrinks and backyard acreage increases, the ecological impact of home gardeners grows ever greater. . . Home gardens have a potential as ecological sanctuaries. . . Gardeners are restoring native plant communities, learning how to put back the pieces so that nature can heal itself and get on with evolution." Marinelli suggests that we imagine the possibilities: a new suburban landscape in

which natural gardens link up to provide living space for beleaguered wildlife, forming a network of corridors that crisscross the continent.

Marinelli brings the concept of biodiversity to my level—something I can do immediately that may make a difference. I have landscaped my front yard here in urban (not suburban) Broad Ripple with native plants and hope that my neighbors will grasp the idea and join me.

If we each grow a variety of trees, shrubs, flowers, vines and aquatics that are native to our regions, we can produce the means to the end—biodiversity.

So let's persevere and not let the information age boggle our minds. Look for gems of wisdom that we can use to make our earth a better, friendlier place for all creatures.

* Wild Earth, 1955 W Grant Rd., Suite 148A, Tucson, AZ 85745



Prairie . . . continued from page 2

ously administered mowing, but infrequent mowing that allowed the prairie plants some shot at a meaningful existence. Other times, the mowing was not close up to the stones, which left some room for a few species to flourish in an otherwise neatly trimmed environment. In some cases, Dr. Betz was successful in convincing those respon-

sible for maintaining the cemeteries into "letting them go." This translated into cessation of mowing which allowed the prairie plants to be free at last to fully express themselves.

Letting these cemeteries "go" is not an easy decision for most folks responsible for caring for them. Our culture is geared toward neatness.

And after all, cemeteries are the final resting places—places of honor—for our fathers and mothers, brothers and sisters, friends and neighbors. In the minds of many, letting the grass grow shows disrespect for the deceased. Many of the cemeteries where prairie plants survived were old, small, pioneer

Prairie . . . continued on page 4

Scientific names of plants mentioned in the article

* Indicates an invasive exotic species

Big bluestem
Andropogon gerardii

Butterflyweed
Asclepias tuberosa

Canada thistle *
Cirsium arvense

Common milkweed
Asclepias syriaca

Compass plant
Silphium laciniatum

Cream wild indigo
Baptisia leucophaea

Culver's root
Veronicastrum virginicum

Downy sunflower
Helianthus mollis

False aloe
Agave virginica

Hoary puccoon
Lithospermum canescens

Indian grass
Sorghastrum nutans

Leadplant
Amorpha canescens

New Jersey tea
Ceanothus americanus

Pale purple coneflower
Echinacea pallida

Prairie dock
Silphium terebinthinaceum

Prairie dropseed
Sporobolus heterolepis

Prairie gentian
Gentiana puberulenta

cemeteries where new burials hadn't taken place in decades, and they were often somewhat neglected anyway. At cemeteries where the plants were allowed to grow, the results were often incredibly exciting with many prairie species flourishing and spreading in just a few years.

During his prairie cemetery excursions, Dr. Betz found a few interesting cemeteries in Indiana. Then in the 1970's and 1980's, natural area inventories—efforts to locate significant natural areas—were in full swing in many midwestern states. These efforts were often conducted in association with efforts by newly established Natural Heritage Programs in many states to locate rare plants and animals. During these inventories, several other cemetery prairies were found in Indiana. The Natural Area Registry, a cooperative landowner contact effort between The Division of Nature Preserves and The Nature Conservancy, became the vehicle through which several cemetery prairies became managed areas.

Over the years, most of these areas were dropped as managed areas, usually for one of two reasons. First, it turned out that some contained few prairie species. Each site commanded attention, if not just for annual prescribed burning, then for weed control. With manpower resources stretched thin, we chose

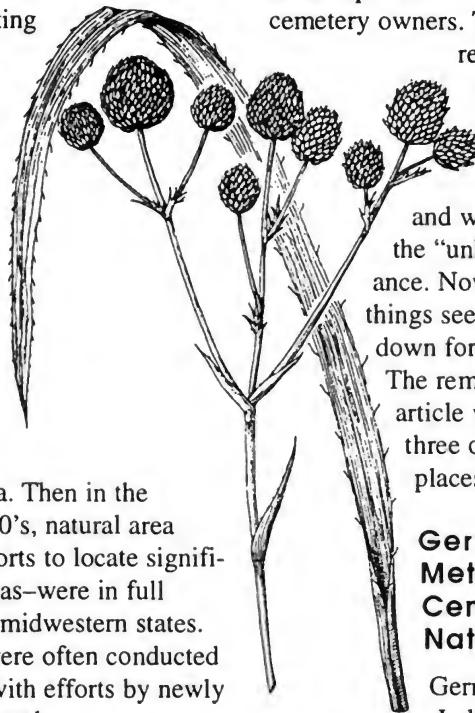
to drop some of the cemeteries that had few species in order to focus efforts on higher-priority management needs elsewhere. Secondly, some cemeteries that we would have kept on were dropped by the cemetery owners. This was often in response to criticism from folks who had relatives buried in the cemetery, and who objected to the "unkempt" appearance. Now, years later, things seem to have settled down for the time being. The remainder of this article will focus on three of these important places.

German Methodist Cemetery Prairie Nature Preserve

German Methodist, in Lake County, is unique among the three sites that will be discussed here in that there are no

grave sites in the prairie. This prairie was discovered by Floyd Swink and Ray Schulenburg of the Morton Arboretum, who informed Bob Betz about it. Dr. Betz visited it on several occasions and compiled a species list of over 65 native prairie species, thus documenting its special significance. At the time of its discovery, it consisted of approximately 1.6 acres in an L-shape on the north and east sides of an existing cemetery.

Convinced of its significance, Dr. Betz contacted William Barnes of the rather newly established Division of Nature Preserves in the Indiana Department of Natural



Rattlesnake master
(*Eryngium yuccifolium*)

Resources. This was apparently in 1972. During the next couple of years, initial contacts were made with the owners of the cemetery in order to broach the subject of protection of the prairie with the suggestion being presented that a land trade be made whereby the cemetery would not experience any loss of land for burials. In 1974, before acquisition ever really got off the ground, it was discovered that the cemetery administration plowed up and destroyed the north piece consisting of about .6 acres. That act inspired much effort to protect the remainder before it, too, was destroyed. While trying to decide what to do, different scenarios were discussed regarding who should buy it and who should own it.

Finally, The Nature Conservancy took the lead, and in 1979 they were successful in buying adjacent land and making the land trade that protected the remaining one acre of the prairie. In 1981, the prairie was dedicated as a nature preserve under the state nature preserve law.

There is no question that German Methodist Cemetery Prairie is a jewel. The species list for the area is now over 100 species, although some of these are not native species, and a few are not really prairie plants. It has been suggested that perhaps German Methodist is the most diverse acre in Indiana. Whether or not it is doesn't really matter much. It is clearly one of the finest remaining prairie remnants in the state regardless of its size. Dominated by prairie dropseed grass, the prairie plant association reflects the very

best of what a virgin black-soil prairie should represent. The list goes on and on, but includes prairie phlox, cream wild indigo, hoary puccoon, shooting star, prairie panic grass, prairie lily, purple prairie clover, wild quinine, compass plant, rattlesnake master, prairie gentian, and many, many more.

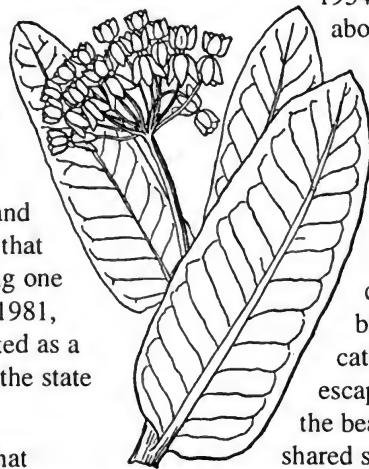
Smith Cemetery Nature Preserve

In 1979, the Indiana Natural Heritage Program was attempting to locate old collection sites for royal catchfly, an endangered species in Indiana, in Vermillion County. The information they had indicated that it had been found in 1945 and in

1954 along Route 63 about a mile south of Perrysville. At Smith Cemetery, they found what they were looking for. In the fencerow along the north side of the cemetery, the blazing red royal catchfly couldn't escape attention. There, the beautiful catchfly shared space along the fence with a handful of other prairie plants. A quick look around the

cemetery revealed that a few other prairie plants were tucked around the stones within the cemetery proper.

Based on the success of Dr. Betz and others in Illinois, and others in other midwestern states, it was decided to approach the township trustee with the idea of "letting the prairie grow." The area was nomi-



Prairie milkweed
(*Asclepias sullivantii*)

Prairie lily
Lilium philadelphicum

Prairie milkweed
Asclepias sullivantii

Prairie panic grass
Panicum leibergii

Prairie phlox
Phlox pilosa

Prairie violet
Viola pedatifida

Purple prairie clover
Petalostemum purpureum
or *Dalea purpurea*

Rattlesnake master
Eryngium yuccifolium

Royal catchfly
Silene regia

Sand milkweed
Asclepias amplexicaulis

Scaly gayfeather
Liatris squarrosa

Shooting star
Dodecatheon meadia

Short green milkweed
Asclepias viridiflora

White prairie clover
Petalostemum candida or
Dalea candida

White wild indigo
Baptisia leucantha or
B. lactea

Wild parsnip *
Pastinaca sativa

Wild quinine
Parthenium integrifolium

Yellow coneflower
Ratibida pinnata

Prairie . . . continued on page 12

Basic Reproductive Biology of Flowering Plants

Recall, from the first article in this series, in the spring issue, volume 6 number 1, that the stamen is the male reproductive organ in plants. It is made up of the anther, that produces pollen, and the filament, that elevates the anther above the base of the flower. Anthers dehisce, or open, in elaborate ways to release pollen. Some

anthers have pores that open like flip-tops; some open all along their sides like mature green beans.

Pollen produced in search of an egg to fertilize, but first **pollination** must occur.

Pollination occurs when a pollen grain lands on the surface of the stigma of a carpel, the female organ of

a flower. Pollination may be facilitated by insects, such as bees and butterflies, or other animals. Some other plants rely on wind to carry pollen from flower to flower. These are the notorious allergy causers like grasses, ragweed, and forest trees. The copious pollen needed by plants that rely on chance winds to carry out pollination means some of that pollen ends up triggering hay fever in sensitive noses.

A pollen grain is a microscopic two-celled structure surrounded by a

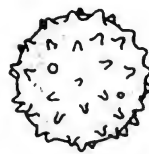
thick wall to prevent desiccation. These thick, tough walls are some of the most enduring structures made by plants. Fossil pollen from thousands of years ago remains and is used to reconstruct ancient floras. Characteristics of the pollen walls can be used to identify

genera and sometimes species.

The cells within each grain are the **tube cell** and the **generative cell**. Both have half the normal chromosome complement of mature plant cells. Like sperm in mammals, these cells are the products of the type of cell division called **meiosis**. The

generative cell will divide to form two **sperm**. The tube cell will direct the growth of the **pollen tube** through which the sperm will reach the egg (more on this later).

Once pollination has occurred, the tube cell produces a pollen tube that grows through the style of the flower and deposits the two sperm into an ovule within the ovary. One-seeded fruits have one ovule per ovary, many-seeded fruits have many ovules. Each seed produced is the result of the successful growth



EXTERIOR OF
POLLEN GRAIN

by Dr. Rebecca Dolan

of a pollen tube and successful fertilization. It's fairly easy to imagine the path of a pollen tube through the style of a cherry flower toward the single ovule within the ovary.

But imagine the congested style of a watermelon flower!

As in humans, plant ovaries produce **eggs** by meiosis, and these also have half the number of chromosomes as adult cells. Thus, when the egg and sperm join during **fertilization**, the resulting embryo has a complete set of chromosomes, half from each parent. Events associated with fertilization in flowering plants are somewhat more complex than in humans, however.

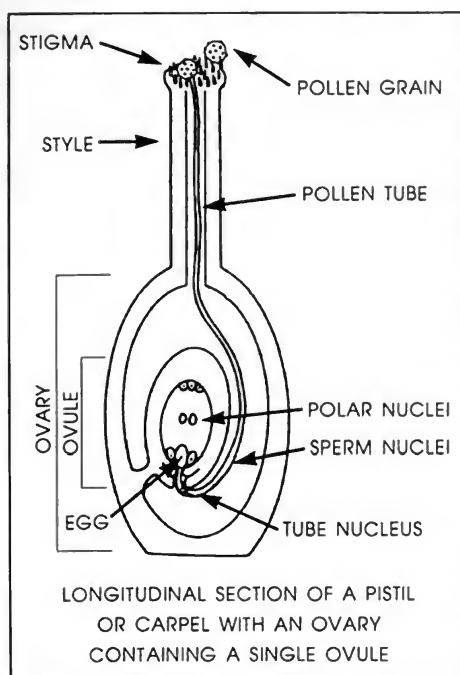
In addition to the egg, plant ovaries produce some accessory cells that help in seed development. You may have wondered, why produce two sperm from each pollen grain? One sperm joins with the egg to form the embryo. The other joins with two **polar nuclei** to form an unusual tissue called **endosperm**.

Endosperm provides nutrients to the embryo as it develops within the seed. Endosperm has not one, or two, but three chromosome sets (one from each polar nucleus, one from the sperm). The two-step union of the egg and sperm along with the union of the sperm with the polar nuclei is unique to plants. It is referred to as **double fertilization**.

Next time we'll look at the anatomy of a seed.

Becky Dolan is Director of the Friesner Herbarium at Butler University and an INPAWS member.

Illustrations by Jan Glimm Lacy



Bombs Over Nature at the JPG?

by Ted Harris

Located a few miles north of the town of Madison in southeastern Indiana, the Jefferson Proving Ground (JPG) is a 55,000-acre site that served as a testing center for the U.S. Army from 1941 to its closure in 1995. A legacy of its use is that the JPG's Northern Firing Range Area (51,000 acres) still contains 1.5 million rounds of unexploded munitions.

The Jefferson Proving Grounds lies on the Illinoian Till Plain in an area known as the Muscatatuck Flats and Canyon Section of the Bluegrass Natural Region. This section's trees include American beech, red maple, sweetgum, black gum, pin oak, swamp chestnut oak and tulip tree.

Because of munitions testing, the Northern Area was off-limits to most human uses for many years. Areas that had formerly been converted to agriculture reverted to forests. Remnant populations of native plants and animals were able to thrive. In 1992, leading up to the planned closure, Indiana's Division of Nature Preserves was invited to survey the Proving Ground's plant species in its unrestricted areas.

Potential natural community types (nine in number) and potential rare plant species (forty-six in number) were identified prior to beginning the ground search. The search itself yielded a remarkable twenty-nine endangered, threatened, rare, and watch-list plants. State endangered species were clustered foxglove, twining bartonia, elliptical rushfoil, round-leaved boneset, tree club-moss, climbing fern, Maryland meadow beauty, longbeak arrow-head, and netted chain-fern.

The Division of Nature Preserves made eight management recommendations in its 1993 report: 1) consider a large portion of JPG as an ecosystem reserve; 2) protect the best blocks as Research Natural Areas or as Indiana Nature Preserves; 3) control exotics; 4) manage some areas as old growth; 5) reduce roadside mowing frequency to one time per year; 6) prohibit wetland draining and dam construction; 7) expand the use of fire; and 8) conduct additional surveys as further clean-up and reuse decisions were made.

In addition to forests, JPG contains 6,000 acres of wetlands. It also has several high-quality streams, large grassland areas and 31 caves, supporting diverse populations of muskels, fishes, amphibians, reptiles, birds and mammals. Numerous professional and conservation organizations jumped on the bandwagon urging protection for this property, and, for a time, the chances for JPG's protection appeared to be good.

In May 1997, the U.S. Army and the U.S. Fish and Wildlife Service entered into an agreement. It called for the USFWS to develop an ecosystem-based plan to maintain and enhance habitat, as well as to provide controlled recreational opportunities. This was basically an initial step toward creating a 51,000-acre National Wildlife Refuge, which would be among the largest in the Midwest.

Later in 1997, the Army also entered into an agreement with the Indiana Air National Guard, allowing them to use 1,000 acres for air-to-ground training in

exchange for helping with mowing and other maintenance tasks. Now, however, the Air National Guard has requested an expansion of their activities to include the whole 51,000 acres; and the Army has pulled out of negotiating with the Fish and Wildlife Service regarding a refuge.

Bombs over Nature? No thanks! INPAWS is writing to protest these developments, and INPAWS' members might well do the same. Consider these words from the Division of Nature Preserves' 1993 report: "... we have observed an almost overwhelming variety of successional natural vegetation types, as well as mature forests, which uniquely represent the vegetation of this entire region. Nowhere can such an assortment of the region's natural heritage be found; it just does not exist, especially at the scale found in JPG, anywhere else." The JPG clearly deserves to be protected.

Support the Jefferson Proving Ground National Wildlife Refuge by writing to

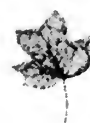
Honorable Paul Johnson
Deputy Assistant Secretary
Installation and Housing
Department of the Army
110 Army Pentagon
Washington, D.C. 20310-0110

and send copies to

Representative Baron Hill
U.S. House of Representatives
Washington, D.C. 20515

and to both Senators Richard Lugar and Evan Bayh, each at the United States Senate, Washington, D.C. 20510.

Thanks.



M U L T I F L O R A E

Mark your calendars for the INPAWS Sixth Annual Meeting!

Saturday, November 20, 1999

at the beautiful new building
of the

Indiana Historical Society

located near the Canal and
Military Park in downtown
Indianapolis.

Note the new date and loca-
tion. There will be more infor-
mation in the next issue of this
newsletter.

Sycamore Land Trust

will have a workday on
Sunday, September 19, 1999,
to conduct a tree survey at
SLT's Wayne Woods site, which
is west of Bloomington in
Monroe County.

Meet at the Monroe County
Public Library at 9:30 AM to
carpool to the Woods. For
more information, or for direc-
tions to the site, call Dave
Welch at (812) 323-9983 or
Kathleen Dowd Gailey at
(812) 824-3441.

Governor and Mrs. Frank
O'Bannon have asked INPAWS
to help establish an

Indiana wildflower garden

on the grounds of the official res-
idence on North Meridian Street
in Indianapolis. If you are inter-
ested in contributing some native
wildflowers to this project, or
know of a construction site in
Indianapolis where native wild-
flowers can be rescued, please
contact Carolyn Harstad, 5952
Lieber Road, Indianapolis, IN
46228, or call her at
317-257-9452.

Join Indiana's Newest, State-Wide Beekeepers Organization

"To promote better beekeeping throughout Indiana"

Indiana Beekeepers Association hosts field trips
and workshops, and publishes a newsletter.

July 17 • Workshop and conference at Princeton (Vic Pfaff • 812-683-3818)

October 16 • Conference in Muncie (Dave Laney • 219-656-8701)

NAME _____

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☐ Check here if you are a member of Indiana Farm Bureau

Annual Dues: \$10 – Individual; \$15 – Family

Please complete form and send to:

Indiana Beekeepers Association
25725 New Road
North Liberty, Indiana 46554

For more information contact Dave Laney (219) 656-8701

Herb Gatherings

"The Newsletter for the Thymes"
has initiated a campaign to
encourage the U.S. Post Office to
honor our rich botanical heritage by
featuring native American herbs,
such as Purple Coneflower,
Butterfly Weed, Bee Balm, etc., on
stamps as early in the new millen-
nium as possible. To lend your sup-
port, write to the

Citizen's Stamp Advisory Committee

**c/o Stamp Development
U.S. Postal Service**

**475 L'Enfant SW, Room 4474E
Washington, DC 20260-2437**

and send some reasons why you
think herbs should be featured on a
U.S. postage stamp (food, medicine,
clothing, decoration, fragrance). For
further information about this pro-
ject, contact

Herb Gatherings
10949 E. 200 S
Lafayette, IN 47905
or call (765) 296-4116.

LETTER TO THE EDITOR

From the Editor of *Wild Garden* Magazine

Dear Carolyn:

I'm very sorry to tell you that we will no longer be able to publish *Wild Garden*. We had hoped to sell the magazine but the sale fell through, and we don't have the financial resources to continue. All of the current subscribers will receive *The American Gardener* magazine (published by the American Horticultural Society), which in recent months has had about 90 percent native plant content. Please let your members know that they will soon be receiving a letter to that effect. Thanks for all of your support for the magazine. I know that the native plant movement will continue to flourish with support from organizations such as INPAWS.

Best Regards,
Joanne Wolfe
Wild Garden

Indiana has a wealth of wildlife that Hoosiers enjoy and benefit from every day, but wild animals can sometimes become a nuisance.

The Indiana Nuisance Wildlife Hotline can provide information on how to live with wildlife, as well as advice on how to manage conflicts with wildlife. Wildlife professionals are on hand from 8 AM to 5 PM, Monday through Friday, to provide expert advice and information on management and control resources. Call 1-800-893-4116, or from the Lafayette area, call 496-3968.

Highlights of the INPAWS Overnight Bus Trip to Northern Indiana, Saturday and Sunday, August 28 and 29, 1999

Prairie restoration in Indiana will be our focus. First stop will be in Lafayette to visit the Museums at Prophetstown, where more than 100 acres of prairie have been sown over the past two years. We will witness the development of seeded prairie and learn about the future restoration of the Museum property, and Prophetstown State Park. Our second stop will be Spinn Prairie Nature Preserve, a 30-acre native prairie that is being restored effectively through brush removal and prescribed fire, increasing both the diversity and the abundance of the native prairie flora. Our final site will be The Nature Conservancy's Kankakee Sands Restoration project, an ambitious undertaking that will restore 7,000 acres of prairies and wetlands. Project manager and former INPAWS president Jeff Maddox will describe the efforts.

Sunday's first stop is Pigeon River Fish and Wildlife Area. Lee Casebere and Tom Swinford of the Division of Nature Preserves will lead us through the spectacular fens of this preserve where we'll see Spotted Joe-Pye Weed, Showy Black-Eyed Susan, and Boneset in full bloom, and many smaller species such as Purple Gerardia, Grass of Parnassus, and Kalm's Lobelia. Tom will also introduce us to his dragonfly research at the site, providing insight into these fascinating predatory insects.

Registration info will be in the mail soon. Please join us for this enjoyable and educational weekend.

Kevin Tunesvick • 765-354-2775



NATURE WALKS AT BUTLER UNIVERSITY

Join Dr. Rebecca Dolan for nature walks on the **second Tuesday** of each month at noon:

Visiting Butler Prairie

**August 10
September 14
October 12**

Meet behind Gallahue Hall on the Butler University campus near the greenhouse. Walks will last about 45 minutes. There is no charge and all are welcome.

If you would like to receive a monthly reminder of the walk, or wish to be dropped from the reminder list, please call Dr. Dolan at 317-940-9413, or email rdolan@butler.edu.

www.inpaws.org

Visit our website for news and information about INPAWS and native plant issues, as well as links to a wealth of like-minded organizations.

We would like to update our site with **your** news, information, comments, ideas, opinions, suggestions. In short, anything of interest to all concerned with preserving native plants and their habitats.

Please email Anne Wilson
wilson@hsonline.net

1999 Plant Sale and Auction Report

*by Marilyn Spurgeon,
Chairman*

May 15. What a wonderful day! The weather and facility were perfect. The plants, more than 600, were in great condition due to early digging and great cooperation from INPAWS members. The volunteers were a helpful, willing, cheerful group. The plant experts were on the ball from beginning to end. The food was refreshing and appreciated by the volunteers and proved to be a hospitable gesture to the visitors. The auctioneer and his assistants were in top form—a truly successful, educational experience.

Our event brought in just over \$5,000! What joy and satisfaction for the committee. We are truly grateful for all the work and help, from members, visitors, and Indy Parks.

The two work days, which paid the rent to use the Burello Center at Garfield Park, were an easy way to save \$250 and help the parks by planting grass and sedge plugs. Some of us even enjoyed a hike, a swim, or playing in the mud.

Mud Therapy in Indianapolis

by Don Miller

It ought to be a new age therapy if it isn't already. Brookston soil is a Central Indiana clay soil that is extremely gooey when wet, as INPAWS members discovered. Between laughing, swimming, falling down in the muddy water, and Subway sandwiches, INPAWS volunteers installed more than 1,000 wetland plants at Raymond Park last week. The project was done as part of a trade-out agreement for the use of Garfield Park for the 1999 Spring Plant Auction.

Altogether, more than 8,000 sedges, rushes, forbs and grasses have been planted at Raymond Park by INPAWS, ASC Corporation volunteers, and more than 500 school students. This includes 37 different wetland species, all native to Central Indiana. The seven-acre project includes a three-acre mesic prairie, a one-acre emergent wetland, and a three-acre wet-mesic prairie area that will be planted this month. Some huge red oak trees occupy a high-quality woodlot adjoining the site.

Raymond Park middle school teachers and students currently use the facility as an outdoor lab. The park is located adjoining Raymond Park Middle School and Indy Island Aquatic Facility near the 8500 block of E. Raymond Street in Indianapolis. INPAWS members and friends are welcome to volunteer in other native planting opportunities this year. If you are interested contact Don Miller at 327-7416 or Wendy Smith at 327-1724. Thank you.



*Many thanks to
**Spence Restoration
Nursery** in Muncie
for providing the plants
and specifications,
and to Marilyn Spurgeon,
INPAWS auction
chairman, who
organized the project.*

Would you like to look back and realize that you had a major part in raising more than \$22,000 for INPAWS projects by giving just one day a year to the effort?

Let me tell you how!!

I need relief as your plant sale auctioneer. Health and lifestyle dictate the need to make a change.

If you would like to step up and take over, I would be happy to coach you if you desire, and provide back-up if you choose. In short, I would reveal everything I know (wouldn't take long!). The next auction will be in the spring of Y2K.

There is no age or gender restriction. (An Auctiondear?) You would be ably assisted by a cadre of seasoned supporters.

Would you like to try?

Call me at 317-356-0953 or email: rekontak@Juno.com)

Thanks a big bunch for all your past support. It has been wonderful!!



Rolland Kontak

"Leaves of three, let them be; berries white, take ye flight"

Poison Ivy

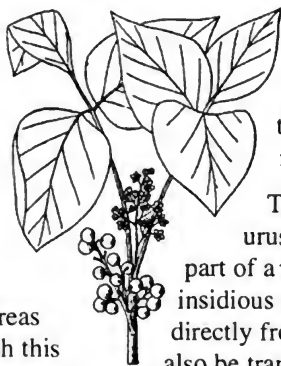
by Carolyn Harstad

While hiking in late summer in a wooded area not far from the Indiana Dunes, I came upon a large mass of beautiful red leaves and striking white berries. Upon closer examination, I discovered that this lovely groundcover was none other than my old nemesis, Poison Ivy.

"Leaves of three, let them be; berries white, take ye flight" is the old adage for Poison Ivy (*Rhus radicans*). Anyone planning to hike in the woods, rescue or transplant wildflowers, or weed wooded areas should become familiar with this vine. This member of the Sumac Family is poisonous in any season, and even burning it can cause severe allergic reactions. Early in the spring, Poison Ivy leaves may be red and greasy-looking, but as the season progresses the leaves become larger, and turn medium-green. The leaves look very similar to Virginia Creeper (*Parthenocissus quinquefolia*) except that Poison Ivy has three leaflets and white berries, while Virginia Creeper has five leaflets and blue-black grape-like berries. I like to describe the two outer leaflets of Poison Ivy to my grandchildren as "mittens," since they often have a coarse tooth on the side which looks like a thumb. The center leaflet may be smooth, or may have a broad tooth on each side. There is a similarity in the shape of Poison Ivy leaves and the leaves of the Poinsettia plant. Birds love the berries of Poison Ivy, so even "bad" natives have some good qualities.

I used to be able to pull Poison Ivy without concern as long as I wore protective clothing and showered thoroughly when I finished. However, in recent years I no longer

have that privilege. I suppose repeated contact with this plant has broken through my so-called immunity because now when I come in contact with it, I invariably get the familiar rash of reddish, water-filled blisters—and the nasty accompanying itching! In fact, as I write, I can see two spots of those familiar blisters on my right hand.



This rash is caused by urushiol, the oil which is part of a Poison Ivy plant. This insidious oil can attack you directly from the plant, but it can also be transferred to your sensitive skin by your clothing, shoes, gardening tools, and even your favorite pet's fur. So what do I do to prevent receiving this "gift" from the Poison Ivy plant? I wear long pants, socks and enclosed shoes regardless of temperatures when I know I will be in an infested area. Generally I also wear a long-sleeved shirt, but sometimes the heat demands bare arms. When weeding or gardening, I remove all jewelry, including my watch and don the disposable latex medical gloves which I purchase in boxes of 50-100 at the local drug-store. Yes, they make my hands sweat, but I prefer sweaty hands to itchy ones, and latex gloves ARE disposable. Finally, I use a product called Tecnu (available at the drug-store). This translucent liquid keeps the urushiol from penetrating the skin—although it is not foolproof. The directions tell consumers to apply the liquid, rub it into the skin thoroughly, and rinse with plenty of water within eight hours of exposure. I also use Tecnu in two other ways. I put a light coating on all exposed skin, just as you would apply sunscreen,

before heading outside. And I have discovered that a few drops applied directly to those nasty blisters and left to dry actually seems to stop the itching and help the rash heal more quickly. I have tried a variety of Poison Ivy products all of which are designed to seal off the rash from the air and help alleviate the itching. These include Ivarest cream, CalaGel, and lotions containing calamine, caladryl, or benadryl, but so far, I find Tecnu the most effective.

As you enjoy the wonderful outdoors, remember that an ounce of prevention is worth a pound of cure. Poison Ivy grows throughout the woodland floor as any other leafy green perennial, or can be found scrambling up trees as a vine. Even dead Poison Ivy contains urushiol oil, so always take precautions whenever you are near this plant. Learn to recognize Poison Ivy and avoid it. Watch for it as you walk through the woods. Pull it out of your home landscape and dispose of it in a plastic bag, or hit it with Roundup or a good poison ivy spray. After you have completed your task, be sure to shower **immediately**, wash your clothing in hot water with a strong detergent, and throw the latex gloves away. A walk in the woods, rescuing wildflowers from construction sites, or even weeding your woodland garden are pleasurable activities. Just watch out for that old nemesis—Poison Ivy!

Editor Carolyn Harstad's book Gardening with Native Plants and Wildflowers in the Lower Midwest will be coming soon from IU Press. Watch for information about a book-signing party in September!

nated to the Natural Area Registry, and Registry Director Paul Carmony approached trustee Delores Hicks with the idea. She agreed to go along with this unconventional request in 1981, and the cemetery has been managed as a prairie ever since. In 1997, the area was finally dedicated as a nature preserve.

Smith Cemetery is not as diverse as German Methodist, but it had a long history of mowing which probably led to the demise of some prairie plants. But in spite of that, the plant list has over forty species, the majority being good prairie plants. The rarest ones are the royal catchfly and prairie violet. Among the best of the other species are lead-plant, hoary puccoon, Culver's root, prairie dock, pale purple coneflower, wild quinine, and white prairie clover. A particularly colorful time to visit is when the royal catchfly is in bloom in late July and early August.

To anyone interested in the cultural history of Smith Cemetery, the stones in the cemetery were documented by former state park naturalist Lois Gray. The information is bound into a book that is available at local Vermillion County libraries in Perrysville, Newport and Cayuga.

Barrens Cemetery

In pre-settlement Indiana, large areas of Harrison and Washington Counties in south-central Indiana were known as "barrens." Located among the sinkholes on the Mitchell

Karst Plain, the barrens occurred on dry, flinty soils and contained most of the same plant species as the prairies of northern Indiana. Why these prairie-like areas occurred here is subject to speculation, but it was probably a combination of several factors. First, the soils are relatively dry and drain rapidly due to the numerous sinkholes which drain away water quickly after rainfall. Moist, wooded stream valleys are known to be effective fire barriers in many cases. With few surface streams in the sinkhole plain, fires would have been able to burn over larger areas without encountering such barriers. Fires were known to have burned over the barrens on a regular basis, and these were probably started by Native Americans most of the time, and by lightning part of the time. Since other parts of the Mitchell Karst Plain had dry soils, and most of it

was forested, these reasons don't fully explain why the barrens existed. The answers may never be known.

In any case, barrens covered hundreds of acres in this area. It was a landscape feature of note to the early settlers—they established the settlement of Central Barren near the center of one of the largest areas of barrens in Harrison County. Fire suppression, conversion to farmland, and urban development—the same things that caused the demise of the prairies—eliminated the barrens. Very few remnants are known, and even fewer contain much diversity. One of the very best remnants known is Barrens Cemetery.

Discovered by the Division of Nature Preserves in the early 1980's, this cemetery was another old pioneer cemetery that received occasional mowing, but just enough neglect to let the barrens plants survive around the stones and along the edges. Since 1984, the cemetery has been "let go" and managed for the significant vegetation that exists there.

Among the many familiar prairie plants that survive there are big bluestem, Indian grass, hoary puccoon, white wild indigo, yellow coneflower, rattlesnake master, New Jersey tea, and downy sunflower. Milkweeds are well represented here, and include butterflyweed, common milkweed, prairie milkweed, sand milkweed and short green milkweed. Since this site is so far removed from the northern Indiana prairies, it can be expected that species with more southerly ranges would be present. That is exactly the case at Barrens

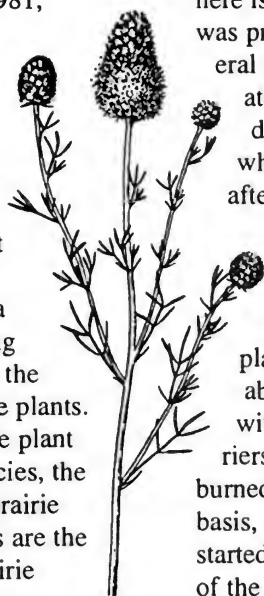
Cemetery, and false aloes and scaly gayfeather are among the southern species present.

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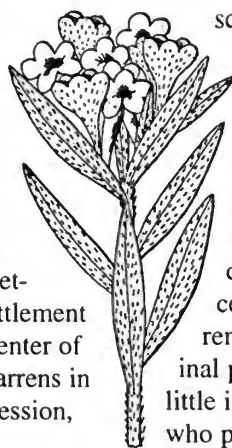
You have just learned a little bit about three significant places in Indiana, closely associated with cemeteries, that preserve remnants of Indiana's original prairie heritage. It seems a little ironic that the pioneers who paved the way for the

destruction of the prairies and barrens are now sharing their final

resting place with plants from those long-gone ecosystems. But perhaps it is a fateful reunion of the pioneers with familiar plants. One thing is



Purple prairie clover
(*Dalea purpurea*)



Hoary puccoon
(*Lithospermum canescens*)

for sure. These plants are no longer familiar to the general populace.

But to those of us who relish diversity in our landscapes and native plants in our midst, the knowledge that these places exist is comforting; the desire to visit them and revel in their existence is food for hungry botanical appetites. Perhaps especially since they are located in or adjacent to cemeteries, it causes one to reflect upon what our culture has done to its native landscapes, and what we might do to prevent further losses.

.....

In case you're interested in visiting these three sites, here is more information:

German Methodist Cemetery Prairie Nature Preserve:

This is a restricted access preserve in Lake County. Please contact The Nature Conservancy at 317-923-7547.



Prairie lily
(*Lilium philadelphicum*)

Smith Cemetery Nature Preserve:

Smith Cemetery is located about 2 miles south of Perrysville in Vermillion County.

It is about 1 3/4 miles south of the intersection of State Route 32 and U.S. 41 on the west side of the road. Park along the gravel lane along the north side of the cemetery (be sure not to block the lane since it provides access to a home). There are no trails in the cemetery, but

makeshift paths are usually evident. Chiggers are often prevalent during summer months, so be prepared.

Barrens Cemetery:

From the intersection of State Road 135 and State Road 64 in Harrison

County, go north on SR 135 for 1 1/2 miles to Cemetery Road which T's in from the east. Turn east (right) and go about 1/4 mile to the cemetery located on the south side of the road. There are no trails, but paths are usually evident. Chiggers are present in summer. So, too, are "seed" ticks. Again, be prepared.

Lee Casebere is assistant director of the Division of Nature Preserves of the Indiana Department of Natural Resources, and a charter member of INPAWS. He is interested in birds, reptiles, amphibians, nature photography (he was the principal photographer for Orchids of Indiana, by Mike Homoya, published by the Indiana Academy of Science in 1993) and, of course, plants. His special interest is in the rarer plant communities of prairies, savannahs, limestone glades, barrens, fens and bogs, habitats all well represented in Indiana.

Amos Butler Audubon **Birdathon**

On May 17th, INPAWS board members Roger Hedge and Lee Casebere, along with Cloyce Hedge and Cliff Chapman, participated in a Birdathon to raise money for the Amos Butler Audubon, the Indianapolis area chapter of National Audubon Society. Those four fellows comprised the "DNR Team," one of three main teams involved in the local event.

The Birdathon is an annual event that raises money for worthy conservation purposes. This year, the money is earmarked for purchase of rainforest in Ecuador, breeding bird studies on the Hoosier National

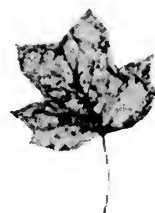
Forest, and for the establishment of a National Audubon office in Indiana.

This event is the major fundraising event for Amos Butler Audubon each year. Last year, the event raised over \$23,000, for which the DNR Team raised more than \$3,000. This year's totals are not yet known, but it looks as if they will beat last year's.

Pledges are made to the birding teams, usually based on "X" cents per species seen. This year, the DNR Team saw 151 species of birds on their route which took them

through parts of northwestern Indiana (including the Lake Michigan shoreline), and down into west-central Indiana as far as Shades State Park.

Anyone interested in pledging next year to the DNR Team can contact Lee or Roger at 317-232-4052, and they'll put you on their list.



INPAWS Coming Events
watch for details in the mail

**Saturday, August 28 and
Sunday, August 29**

Two-day bus trip to northern Indiana. Day one will feature prairie restoration at Museums at Prophetstown, Spinn Prairie, and Kankakee Sands. Sunday will feature the Fens of Pigeon River with a variety of beautiful wildflowers.

Saturday, October 23

Hike at Post Oak-Cedar Nature Preserve in Wyandotte Woods, Harrison County. View spectacular fall foliage and fascinating prairie glades. Join us for a picnic prior to the hike.

Saturday, November 20

Sixth Annual Meeting at the new Indiana Historical Society facility, located near the Canal and Military Park in downtown Indianapolis.

MEMBERSHIP APPLICATION/RENEWAL

Annual dues pertain to the fiscal year January 1 - December 31.
Dues paid after September 1 are applied to the following fiscal year.

- ☐ Student \$10 ☐ Individual \$18 ☐ Family \$25
☐ Patron \$100 ☐ Sponsor \$250 ☐ Corporate \$500
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INDIANA NATIVE PLANT *and Wildflower Society*

Volume 6 Number 3 • Autumn 1999

NEWS

You are invited to the INPAWS

Sixth Annual Conference

Indiana Historical Society Headquarters

450 W. Ohio Street

Indianapolis, Indiana

Saturday, November 20, 1999

9 AM to 5 PM

Native Plants in the Garden and the Landscape

Speakers and workshop sessions will discuss native plants, their use in the garden, and their place in the natural habitat.



Dr. Richard W. Lighty keynote speaker

Scientist. Plant explorer. Teacher. Researcher. Dirt gardener. Mentor to a generation of horticultural leaders.

Dr. Lighty is recently retired as horticulturist for the Mount Cuba Center for the Study of Piedmont Flora, a 230-acre private estate of Mrs. Lammot du Pont Copeland in Greenville, Delaware. The focus of the Mount Cuba Center is on

increasing appreciation of native plants, partly by getting the best cultivars out to the public. Two of Dr. Lighty's that have been introduced into commerce are Aster 'Purple Dome' and Red-twig Dogwood 'Silver and Gold.'

For sixteen years he was director of the Longwood Graduate Program in Public Garden Administration at the University of Delaware. Some call his role in developing leadership in public horticulture his greatest contribution. He trained the people who

now run such noted institutions as Longwood Gardens, Morris Arboretum and Scott Arboretum at Swarthmore.

Dr. Lighty has been working on his own 3+ acre garden for almost four decades, changing it as his sense of what he wanted from a garden changed. Thus the appellation, dirt gardener.

Tentative Schedule on page 2

REGISTRATION

Pre-registration by mail: \$40, including box lunch;
Registration on the day: \$40, not including lunch.

You will soon receive your registration form in the mail. Please complete and return with your check, postmarked no later than **Friday, November 12, 1999.**

*For more information please call Gil or Emily Daniels
at 317-251-7343
or email gdaniels@inetdirect.net*

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TENTATIVE SCHEDULE

8:00 AM - 9:00 AM

Set-up for vendors and exhibitors

9:00 AM - 9:30 AM

Registration

9:30 AM - 9:35 AM

Welcome

9:35 AM - 10:20 AM

Kevin Tungesvick, Spence Nursery,
Exploring the Wildflowers of the Rockies—a comparison of the native flora of the montane and sub-montane forests of the Rocky Mountains with the natives of Indiana.

10:35 AM - 11:20 AM

Keynote Speaker,
Dr. Richard W. Lighty,
New Natives for the Garden.

11:20 AM - 12:00 noon

Annual Meeting

Noon - 1:00 PM

Lunch

1:00 PM - 1:45 PM

First workshop session

• Dr. Rebecca Dolan, Director, Friesner Herbarium, Butler University, will discuss how scientists study rare plants for preservation purposes, and her work with Royal Catchfly (*Silene regia*).

• Carolyn Harstad, author and past president of INPAWS, *Gardening with Native Plants.*

• Ellen Jacquart, Director of Stewardship, The Nature Conservancy, *History of Land Conservation in Indiana*, and presentation of invasives pamphlet.

2:00 PM - 2:45 PM

Second workshop session

• Christine Brewster, Museums of Prophetstown, *Starting Native Plants from Seed.*

• Tom Swinford, Ecologist, DNR, Division of Nature Preserves, *Indiana Plant Communities and Habitats.*

• *Perspectives on Building Plant Communities.* Panel will offer their experiences recreating prairies, meadows, wetlands, woodlands, and oak savannas. Panel participants: Russ Boulding, Bob Rice, Eleanor Rosellini, Nancy Schmutzler, Jan Tellstrom.

3:00 PM - 4:00 PM

Roger Hedge, DNR, Division of Nature Preserves, Indiana Natural Heritage Data Center, *History of Natural Protection in Indiana.*

A. Description of Indiana landscape of the early 1800's.

B. History of natural area protection beginning in 1967.

C. How new areas to protect are identified and located.

D. Description of natural regions found in Indiana.

E. Perils facing native plant communities and how they are managed.

4:00 PM - 5:00 PM

Social Hour

Indiana Native Plant and Wildflower Society Newsletter
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We welcome opposing viewpoints.

Articles, letters, drawings should be sent to Carolyn Harstad, 5952 Lieber Road, Indianapolis, IN 46228.

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arthop@hsonline.net
wilson@hsonline.net

The mission of the Indiana Native Plant and Wildflower Society is to promote the appreciation, preservation, conservation, utilization and scientific study of the flora native to Indiana and to educate the public about the values, beauty, diversity and environmental importance of indigenous vegetation.

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President's Message

by Ruth Ann Ingraham

When I was in school, I studied chemistry and astronomy. I did not take one class in biology or botany. When I look back six years, when INPAWS was a new organization and when my knowledge of native plants was limited to what I called spring wildflowers, I realize how uneducated I was about plants and plant communities. The meaning of terms such as the following were not clear to me: mesic, savannas, wetlands. Prairies, meadows. Grasses, sedges, rushes. Natives, alien invasives. Tall-grass, mixed-grass, short-grass prairies. Spring ephemerals. Forbs. Cultivars, hybrids. Genus, species, subspecies. Compositae, Orchidaceae, Campanulaceae, Asteraceae, Poaceae.

Now, after these wonderful years as a member of INPAWS, I know the meaning of those words and can even do a fair job of pronouncing a word such as Asclepiadaceae (and even think "milkweed.")

I'm so joyfully immersed in all this that not until I made a list of the native plants in a small portion of my front yard for a recent newspaper article did I discover that I have over two dozen natives in that area which measures only 20 feet by 20 feet.

Three days ago I returned from a two-week odyssey to Colorado and back. On the car seat next to me, when I pulled out of my driveway, was a cardboard box with maps and general guides. Also in that box were books about the Prairie. I included my all-time favorite book, *PrairyErth*, the record of author William Least Heat-Moon's study of Chase County, a sparsely populated tract of tall-grass prairie in the

Flint Hills of central Kansas. Others were *Tall Grass Prairie* by Nature Conservancy, *Prairie, The Land and Its People* by Mil Penner and Carol Schmidt, *Grasses* by Lauren Brown and *Plain Pictures-Images of the American Prairie* by Joni L. Kinsey. They were with me when I pulled into a filling station in Pawhuska, Oklahoma, to ask directions to the Prairie Preserve and when a paunchy local farmer dressed in overalls offered to lead me partway. "Just follow my pickup; I'm goin' that way."

The Tallgrass Prairie Preserve. The preserve encompasses 38,000 acres of grassland where bison roam again; the land and animals are now protected and managed by The Nature Conservancy. After 17 miles on mostly gravel road I found a docent couple from Tulsa at the Visitor's Center. They explained why the tall grass was so short—heat and drought. It grows slowly there, they said, and peaks later than in eastern prairies.

I understood the heat part. It was 4:30 PM and 105 degrees Fahrenheit when I started up a path winding through the grasses and forbs. I gulped down water, lathered my exposed skin with sunscreen, put on my straw hat and opened my umbrella, the one printed with huge images of deep green deciduous tree leaves. I walked a quarter mile up the path and wanted to turn onto the 1.5-mile loop trail. But I was alone and shocked by the heat. Reluctantly I returned to my car. The prairie was beautiful but not brilliant with color. Along the way a lone Prairie Rose grabbed my attention and Partridge Pea was abundant. Best of all was Prairie Rose

Gentian, *Sabatia campestris*, a five-petaled pink flower, new to me.

The next day I rolled across Kansas, once entirely prairie and now mostly cultivated or grazed by cattle. Huge feedlots abound along historic U.S. Highway 50.

Returning from Colorado I drove through Nebraska on a road north of and paralleling I-80. Most of my route took me through Sand Hills, a region which contains rich virgin grasslands and covers nearly a fourth of the state. The roadsides along the way were a mass of native plants.

The final stop on my odyssey was the Goose Lake Prairie State Park near Morris, Illinois. Here the prairie by mid-August was tall and thick and lush. Most of the grasses were in flower. *Asclepias* (milk-weeds) were numerous; so were monarch butterflies.

So much has been lost; millions of acres plowed under, over-grazed, and/or developed. But the prairie remnants whisper to us about what the mid-section of our country was like a little more than a century ago; they quietly tell stories, even about parts of our own state of Indiana.

I believe that had the Indiana Native Plant and Wildflower Society not been formed, my life would be diminished. I would have missed contact with the enormous reservoir of knowledgeable people who are part of this flourishing group and who have shared their knowledge with me. My eyes and my mind have been opened onto a vast expanse of the natural world. I would have missed one of the most important and gratifying educational opportunities of my life.

Native Plants at Smock Golf Course

by Art Hopkins

Last July 18th, INPAWS members toured the extensive prairies and native-plant wetlands within Smock Golf Course in southern Marion County. These thriving native plant communities were all created with "imported" seeds and plugs. Due to years of intensive land use, there were few native plants surviving on site when restoration work began in 1995. That year, the head golf professional, Jan Tellstrom, bought seeds of 25 forb species and 5 grass species from Peter Schramm Prairie Restorations in Illinois. He has since added more seeds and plants from our own Spence Restoration Nursery in Muncie, Indiana. As a city property until recently, Smock Golf Course has also had encouragement and advice from Don Miller of Indianapolis Parks Department.

Actually, Jan told us, his original idea was not to restore prairies. He just wanted to "win some Brownie points" with his then-boss, a bluebird enthusiast. So he and his staff started putting up bluebird nest boxes around the property. He assumed the bluebirds would at least lift the spirits of duffers whose game was off. "When a golfer's playing really well, that person's having a great time already,"

explains Jan, "but most of the time, most of us aren't playing really great, and that's when things like this can improve the golfing experience."

Bluebird nest boxes and bird feeders led logically to that first, 2.8-acre prairie installation as a source of food, cover, and shelter for many bird species. Soon, Jan and his staff were themselves drawn in by the native plants' human allures: beauty, seasonal variety, reduced maintenance, and especially reduced mowing on difficult and hazardous slopes and wet places.

Today, five of the 95 acres of "rough" alongside the fairways are in prairie, and this will be expanded. Meanwhile, the bird population on site has greatly expanded, maybe even tripled, over the last five years, and Smock Golf Course is now an Audubon Cooperative Sanctuary.

It has been a learning experience. The first mistake along the way was to till the intended prairie areas too

much and too deeply, thus bringing up lots of dormant weed seeds to the soil surface. When the prairie seedlings emerged, with help from lots of irrigation that first year, so did the competition. Annual burning, usually in March, has helped the native plants to gain the upper hand. Prairie plants' deep roots and subterranean crowns co-evolved with periodic fire and thrive on it, unlike the exotic weed species.

Nevertheless, there's still a lot of weeding to do, particularly of this-tles and prickly wild lettuce. The latter, though it is a bona fide native plant and thus of interest to the INPAWS, is, shall we say, short on mass appeal. It enhances neither the golfing experience nor the golf course maintenance experience. A

narrow, dull-green spire up to 15 feet tall, its nondescript flowers release fluffy seeds that float all over, sowing prickly wild lettuce onto fairways and greens. Hand-pulling of weeds hasn't kept up, so Jan is experimenting with various Roundup application techniques.

On the other hand, Jan has many favorite native plants. One is wild quinine,



Cup Plant
(*Silphium perfoliatum*)



Wild Quinine
(*Parthenium integrifolium*)

Parthenium integrifolium, which grows three to four feet tall and blooms for a month or more. Even after its pure white flowers are spent, the mature seeds look white, so the ornamental value goes on. Also, there's cup plant, *Silphium perfoliatum*, so named for the shape of its leaves, which hold water after a rain. The specific epithet, *perfoliatum*, refers to the fact that each pair of opposite leaves appears to be joined into one big leaf, pierced through the middle by the plant's rising stem. The leaf "cups" are a drinking fountain for birds, and its meaty seeds, like sunflower seeds, are a food source.

Within a fairly compact area, visitors to Smock can view a great variety of native plants, growing in healthy communities, truly a beautiful sight.

INPAWS member Don Miller has restored and/or recreated quite a few native prairies as the native-plant expert for the Indianapolis Parks System. Looking at one of Smock Golf Course's prairies, Don said quietly, "Jan's prairie is packed with a dense stand of wildflowers and grasses—the most impressive stand of introduced prairie I've seen."

If you go, don't miss the whimsical and amazingly detailed chainsaw treestump sculptures created by Brian Ruth, a relative of the Babe's.

Art Hopkins is associate editor of this newsletter, a landscape architect, and lives in Columbus.

An Innovative Bluebird Nest Box

Over the years, the Smock staff have tried several designs for bluebird nest boxes. The best they have found, both for bluebird reproductive success and defense against predators, is also

one of the simplest. It can be easily made from

materials available at any building-supply store: 4" PVC pipe, rebar, conduit, and wood. Put a thick layer of wood shavings in the bottom of the box; this seems

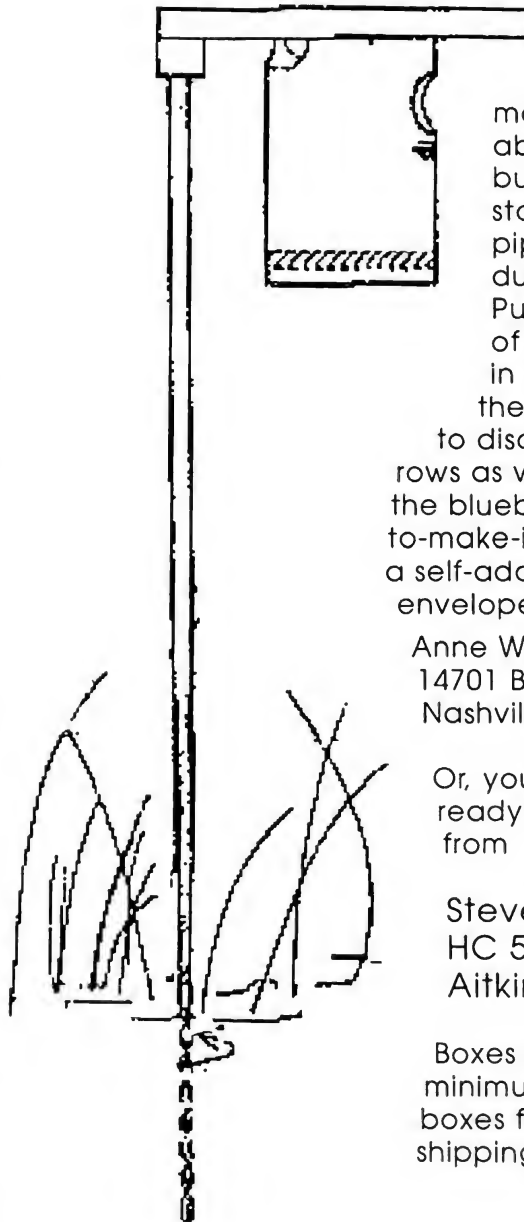
to discourage sparrows as well as to help the bluebirds. For a how-to-make-it drawing, send a self-addressed stamped envelope to

Anne Wilson
14701 Bellsville Road
Nashville, IN 47448

Or, you can buy ready-made boxes from

Steve Gilbertson
HC 5 Box 31
Aitkin, MN 56431

Boxes are \$10 each - minimum order: two boxes for \$20 (including shipping)



Germination of Five Echinacea Species

by Kelly Wampler and Paul Hammond

Purple cone flowers belong to the North American genus *Echinacea*. There are nine species native to the

Midwestern and Eastern United States. It is questionable whether some are truly native to Indiana. Deam suggests that some populations are escapees. All are perennial with purple to rose (rarely white) colored blossoms. Cone flowers bloom in late spring through early fall, depending on species and cultivation practice.

Butterflies and bees are attracted to their large 2 to 4-inch blossoms. *Echinacea purpurea* is considered to be one of the top 10 butterfly nectar plants.

The most well known is *E. purpurea* although its native range is not the most extensive. Native to the Southern and Midwestern United States, *E. purpurea* typically occurs in prairies, savannas, and along forest edges. It has a branched flowering habit with serrated teeth on its leaf margins. *Purpurea* is the most widely grown ornamental. Its ease of germination and fibrous root system make it more adaptable to container culture than many of the other species. *E. purpurea* is used as a fresh-cut flower and the dried cones are used in floral arrangements. Seed is also available in bulk

from prairie restoration and native seed sources. Plants are fairly fast growing, and many of the cultivars will bloom the first year if started early.

Echinacea pallida (pale purple cone flower) and *E. angustifolia* (narrow leaved) are more western species. *Angustifolia* grows in the open prairies of the plains states and southern Manitoba. *Pallida* occurs in the tall-grass prairie region from northern Texas to eastern Illinois.

Sometimes these two species are difficult to distinguish. Pale has white pollen and tends to

have drooping petals. Narrow

coneflower tends to have shorter petals held parallel to the ground. Both are strongly tap-rooted making them more difficult to establish and transplant out of containers.

The Plains Indians used these two species for treating snake bites. In fact, *pallida*, *angustifolia*, and *purpurea* are used extensively as medicinal plants in Europe. Touted as immune system enhancers, they are commonly used as herbal supplements. Cultivation for medicinal purposes has begun in Egypt, China, and many other countries.

The narrow endemic species tend to occur in the southern or central United States in glades, remnant prairies, and pine openings. Reflexed coneflower (*E.*

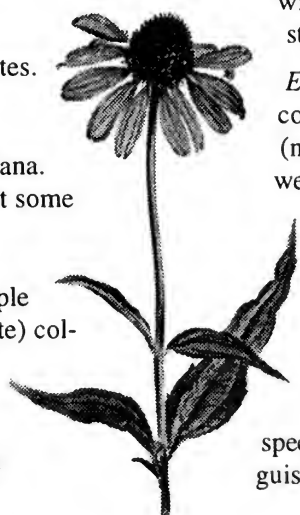
atrorubens) is native to the prairies of Oklahoma and Kansas. *Paradoxa* (Bush's coneflower) is found primarily in northern Arkansas and Missouri. Bush's cone flower usually has yellow blossoms although there is a sub-species which has the more familiar rose-colored flowers.

Echinacea seeds tend not to germinate immediately when placed in an environment that would normally allow for germination. Seed dormancy can either be due to an impermeable seed coat or embryonic dormancy. Embryonic dormancy is due to a lack of enzyme

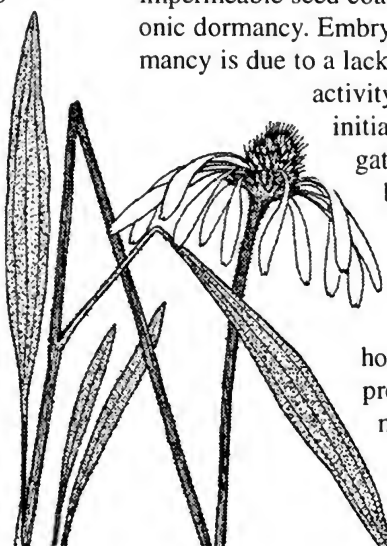
activity needed to initiate cell elongation. This can be broken chemically with potassium nitrate, ethylene, hormones, or pre-chilling moist seeds.

Experiments designed to maximize germination and reduce total time for germination

have been done with *purpurea* and *angustifolia*, and to a lesser degree *pallida*. Both scarification (breaking the seed coat dormancy)



Purple Cone Flower
(*Echinacea purpurea*)



Pale Purple Cone Flower
(*Echinacea pallida*)

and stratification (breaking the embryo dormancy) have been investigated.

Conclusions vary depending on the source. In most reports, there appears to be little

benefit in mechanically nicking the seed coat. In general, stratification improves total germination and uniformity of germination. Some species may require up to three months of chilling. *Purpurea* has conflicting reports. There have been studies suggesting a period of stratification, but other studies found stratification did not improve germination.

We have undertaken a preliminary experiment testing different lengths of cold moist stratification (chilling) on *E. purpurea*, *E. paradoxa*, *E. angustifolia*, *E. atrorubens*, and *E. pallida*. Seeds were sown without fungicide on sterile silica sand in petri dishes and subjected to 0, 2, 4, or 6 weeks of chilling at roughly 4 degrees C.



Narrow-Leaved Cone Flower
(*Echinacea angustifolia*)

After the chilling period seeds were moved to 20 degrees C dark conditions. Seeds were considered germinated if a healthy radicle emerged. Petri dishes were examined for three weeks while under warm conditions.

Our findings support the view that *purpurea* does not need a chilling treatment, although it is not detrimental.

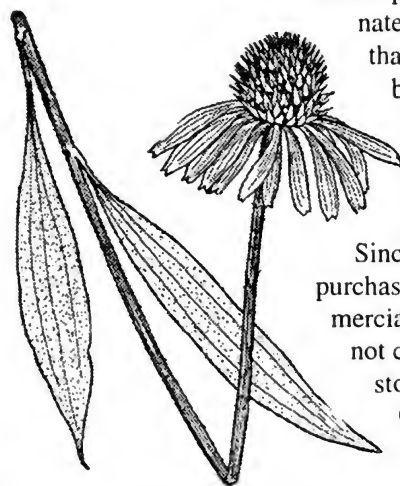
Over 80% of the *purpurea* seed germinated for each treatment of pre-chilling.

Surprisingly, *E. angustifolia* germinated constantly at around 30% regardless of treatment. The other three species all germinated poorly (less than 15%). Seed viability was estimated as high because of lack of rotting and fungus infection.

Since the seed was purchased from a commercial source, we are not certain of initial storage conditions.

Our findings suggest increasing embryonic dormancy in the following order: *purpurea* to *angustifolia*, then

atrorubens/paradoxa, and *pallida*. Stratification of greater than six weeks appears necessary for germination in the last three species.



Bush's Cone Flower
(*Echinacea paradoxa*)

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- Acknowledgements:
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- Kelly Wampler is an undergraduate student at Purdue University.
- Paul Hammond is a graduate student also at Purdue.

M U L T I F L O R A E

The INPAWS Nominating Committee is pleased to present the following slate of candidates for 2000-2001. Voting will be at the annual meeting, November 20, 1999.

President Carolyn Bryson

Vice President Ken Collins

Corresponding Secretary Roger Hedge

Recording Secretary Jean Roberts

Treasurer Clare Oskay

Nominating Committee:

Margo Jaqua, Chairman

Bill Brink, Carolyn Harstad, Don Miller

Are you moving? Will you be away for a while?

We don't want you to miss a single issue of the newsletter. So if you have a change of address, or will be away only temporarily, please fill in the form below.

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Mail this form to:

Katrina Vollmer

3134 Greenbriar Lane

Nashville, IN 47448

or email information to: katrinajo@iquest.net.

A Look Into the Past

Have you ever wondered what Marion County might have looked like before there were interstates and skyscrapers? Well, thanks to IUPUI's Center for Earth and Environmental Science (CEES) we can now take a peek into the past. The CEES has produced a report for Indy Parks entitled *Changes in Marion County's Natural Environment Between the Time of European Settlement, ca.1820, and the Present, 1997*. This report compares witness tree data from the General Land Office Survey of Marion County (1820-1822) and 1911 Soils Data with what can be identified from 1997 infrared satellite imagery and other current information. One of the primary goals of this project is "to provide the Indianapolis Parks Department with a means to identify natural areas in the County with the potential for acquisition and restoration." This project was completed in cooperation with the Indiana Department of Natural Resources, Division of Nature Preserves. The information is also available in digital format, compatible with GIS software.

For copies of this report and current pricing please contact:

Center For Earth and Environmental Science, IUPUI
723 West Michigan Street
Indianapolis, Indiana
317-274-7154

If you have any questions, please contact Don Miller or Wendy Smith, Indy Parks Land Stewardship, 317-327-7416.

Indiana's First Lady Judy O'Bannon

hosted a reception and book signing for Carolyn Harstad's *Go Native!* at the Governor's Residence on Friday, September 24.

She and Carolyn led the guests in planting a variety of woodland native plants donated by Spence Nursery, as well as several Indian Pinks donated by Mark Holeman, in the woodland area at the back of the residence. Judy O'Bannon told of her work with the DOT to encourage the planting of native plants along Indiana roadways.

Carolyn addressed the group, encouraging Judy and the guests to talk to their legislators to try to get the peony replaced with a native plant. She said "Indiana is blessed with a diversity of beautiful native plants. A couple of years ago, the Indiana Academy of Science asked a panel of experts to select about a dozen of these natives as a possible replacements for our current state flower, the peony (which comes from China). Posters and information were distributed to all of the fourth grade classes in Indiana. The children learned about these beautiful natives, each child voted, and collectively the fourth graders of Indiana chose the Fire Pink (*Silene virginica*) to be our new state flower. This small perennial has beautiful bright red flowers with notched petals. It often grows at the edges of woodlands and even on rocky hillsides and is found in all parts of Indiana. We all know that the peony is lovely plant but why should we want our Indiana state flower to come from China? It is time for Indiana to *Go Native!*"

Go Native!

I have decided that it is time to reevaluate my gardening design and execute a major change. Why? This summer, I was gone for over a month. The drought wreaked havoc on my poor (exotic) hostas which lay pathetically on the ground when I arrived home at the end of August. In contrast, the native plants stood straight and tall, blooming gaily. Even the maidenhair ferns were unaffected by the drought. That did it. I decided it was time to follow my own advice and "Go Native!"

My spring garden has always been lush with Wild Geranium, Celandine Poppy, Jacob's Ladder, Trillium, Bloodroot, Mayapples, Twinleaf and Hepatica, as well as most of the spring ephemerals native to Indiana. Once spring fades into summer, my woodland gardens are filled with hostas and companion plants. But now it is time to replace this multitude of hostas with a multitude of native plants. So next year my dainty spring wildflowers will be followed by beautifully boisterous natives like Purple Coneflower, Black-eyed Susans, Great Blue Lobelia, Cardinal Flower, Pink Turtlehead, Bottle Gentian, Indian Pinks, lots of native ferns, and even some species of Goldenrod. These natives have been thriving in a small space in my shady woodland garden and have grown tall and strong. Now it is time to give them more room—in fact to give them center stage. Move over, hostas! It is time to *Go Native!*

Carolyn Harstad



NATURE WALKS AT BUTLER UNIVERSITY

Join Dr. Rebecca Dolan for nature walks on the **second Tuesday** of each month at noon:

November 9

A Walk in the Butler Woods

December 14

Evergreens on Campus

Meet behind Gallahue Hall on the Butler University campus near the greenhouse. Walks will last about 45 minutes. There is no charge and all are welcome.

If you would like to receive a monthly reminder of the walk, or wish to be dropped from the reminder list, please call Dr. Dolan at 317-940-9413, or email rdolan@butler.edu.

www.inpaws.org

Visit our website for news and information about INPAWS and native plant issues, as well as links to a wealth of like-minded organizations.

We would like to update our site with **your** news, information, comments, ideas, opinions, suggestions. In short, anything of interest to all concerned with preserving native plants and their habitats.

**Please email Anne Wilson
wilson@hsonline.net**

Anatomy of a Seed

by Dr. Rebecca Dolan

Consider the seed a life-support “pod” for a tiny plant. The “pod” is designed to carry the infant from cozy mother plant out to colonize a cold cruel world full of herbivores and extremes of environment. These “pods” have been designed by nature to ensure survival for a few weeks or months up to hundreds of years, depending on the species.



Dicot
Phaseolus
Bean

Let’s look at a longitudinal section of a generalized seed to see how it helps the embryo survive and establish. The tiny young plant can be seen as a “y”-shaped embryo in the center of the seed. The arms of the “y” are the young stem with the first leaves, called cotyledons or seed leaves. The bottom of the “y” will develop into the root.



Conifer
Pinus
Pine

Surrounding the embryo is endosperm tissue that provides nutrients to the embryo while it is dormant and, more importantly, while it is germinating but before it can photosynthesize on its own. Endosperm is often composed largely of starch, a form in which energy is stored in plants. As needed, this starch is broken down into sugar that is transported to the embryo.



Monocot
Zea
Corn

On the outside of the seed is an important protective layer called the seed coat. It is derived from tissue that was part of the seed mother’s ovary. Some species’ seed coats are thick and waterproof to protect the seed until it has landed in an appropriate habitat in which to germinate. When we scarify seeds, we mechanically wear away the seed coat to promote germination on the schedule we want.

Many seeds also have specialized additional parts that aid in dispersal, such as hairs, wings or tasty berries that encourage animals to carry seeds away from their mothers via a ride through the animal’s digestive tract (germination in some species is enhanced by this process). Also, seeds are often clustered into many-seeded fruits. There are even some species, whose fruits

ripen in time for the fall migration of birds, which “advertise” their seeds by means of brightly colored foliage.

Becky Dolan is Director of the Friesner Herbarium at Butler University and an INPAWS member.

Illustrations by Jan Glimn Lacy, botanical illustrator and member of INPAWS.



*Cotyledons in different plants.
Some stay below ground.*

Indianapolis Improvements Include Native Plants

by Don Miller

You find a magic lamp and the Genie grants you three wishes. What would they be? Of course, being a devoted INPAWS member you request a magic wand that restores plant communities—or perhaps entire ecosystems. Having this kind of magic would definitely frighten your neighbors. Without magic, and armed only with crude tools, settlers managed to remove 257,000 acres of forest and wetlands of Marion County in less than 200 years. Perhaps the real magic comes with a natural system that continues to create and sustain life despite the human impacts.

Educational programs have made many people aware of some of the environmental problems that impact natural systems. Pollution is just one of the human signs that indicate we are not living successfully within the natural world. Author D. Orr states, "When human artifacts and systems are well designed, they are in harmony with the ecological patterns in which they are embedded. When poorly designed, they undermine those larger patterns, creating pollution, higher costs, and social stress." Although modern society is a long way from implementing sustainable living habits and eco-friendly cities, progress is being made.

Native vegetation has become part of the cities' control plans to improve water quality. A 42-acre engineered wetland is being built to incorporate 70,000 wetland plants and 14 acres of seeded wet-mesic prairie species. The wetland is designed to improve floodplain storage and treat polluted waters on Pogue's Run waterway. Another project is planned to build an engineered wetland to filter runoff from

the Indiana State Fair Grounds before it enters Fall Creek waterway.

City-staffed watershed teams are meeting on a monthly basis to coordinate projects and issues that affect water quality. Native vegetation is a major component of projects being currently planned. The discussion items include wastewater recycling systems, eco-swales (broad ditches packed with natives), habitat restoration, and tree planting to increase groundwater recharge, to filter water and slow stormwater runoff. Native plants will be used in conjunction with a variety of hard structures to reduce pollution entering our waterways. These clean water initiatives dovetail into Indy Parks native plant programs to educate, beautify, and provide wildlife habitat.

Indy Parks began to use native plants to increase the naturalness of parks and Greenways five years ago. The small native demonstration plantings now total 55 acres of seeded area and about 75,000 native plants installed. A local restoration nursery provided the majority of the local-genotype plant material and services necessary to make sure the right plant communities were chosen for each location. Plant types used were wet to mesic prairie varieties, savanna compositions, and woodland varieties. Native species were also planted in ornamental situations around park signs, schools and along the linear Greenways. The small demonstration areas are providing the local examples needed to promote the benefits of native plants.

The goal now is to create a large-scale process to introduce and sustain native vegetation. For the goal

to become reality, vendors and city staff will need to become knowledgeable about how to maintain the native plantings. Mowing and careful use of herbicide will be important tools necessary in managing urban areas that are plagued with invasive and non-native weeds. Invasive weeds are thought to be both the short and long-term challenge. Another challenge will be training and quality control as mowing crews learn to be gardeners. Native landscapes and gardens will not survive the complaints from citizens if the plantings look like they are weedy and not being maintained. The parkways and linear routes along Indy Parks Greenways will most likely be the first areas to be considered for the conversion since these often buffer waterways.

Indy Parks wishes to thank all of you working to educate about the importance of native plants. By our observation, the interest in native plants has increased tremendously over the last five years. Federal regulations stemming from the Clean Water Act also influence the use of native plants as a means to clean up pollution. Indy Parks and other city departments hope to coordinate native plant initiatives that turn into large-scale native plantings within the next 2 years. However, native plant installation projects receive a lower priority than programs to acquire and preserve high-quality natural areas. We cannot really restore the ecosystems that natural processes took eons to create. For that, we would need a magic wand!

Don Miller is the Land Stewardship Coordinator for Indy Parks, a member of INPAWS, and a regular contributor to this newsletter.

Twelfth Annual *Celebration of Nature*

Saturday and Sunday,
December 4th and 5th, and
December 11th and 12th.
10 AM to 4 PM

Eagle Creek Park's Lilly Lodge.

The exhibit features art forms from a variety of media depicting the natural world of flowers, animals and birds. Each year carvers, sculptors, photographers, painters, and weavers gather to display their personal response to the wonders of nature.

This is a statewide exhibit featuring both the better known and newer faces in the art world.

The event is sponsored by the Eagle Creek Park Foundation as part of an ongoing expression of their interest and concern for the natural world. This year the artwork will be available for purchase—a timely opportunity for a good gift idea for the holiday season. Many of the artists will be present to talk with the visitors about their work. The event will be free and open to the public. There is a park admission fee.

For more information, call
(317) 327-7148.

Carolyn Harstad's
wildflower photographs
are on exhibit (and for sale)
at the Indiana Historical
Society's new gift shop, *The
History Market*. The exhibit
will hang from September
13 to October 31. The
Indiana Historical Society is
free and open to the public
Tuesday through Sunday
(closed Monday). For more
information, call 317-232-
1882.

Devoe and Potter Nature Photography Exhibit

On Saturday and Sunday, October 23 and 24, Mavis DeVoe and Tom Potter will exhibit new and recent photographs of natural history. The all-color exhibit will feature wildflowers, scenics, birds, mammals, and the human experience in the natural world.

Mavis DeVoe has recently achieved renown for her award-winning photography featuring wildflowers from across the United States. She has had a number of one-person exhibits around the Central Indiana area in the past year. Mavis has been featured in the Indianapolis Star and other local area news media.

Tom Potter has been teaching nature photography and leading natural history tours for both nature study and photography since 1984. He does archival photographic printing for a number of local photographers. Although Tom's images have been published in a variety of national publications over the years, he prefers to use his work for teaching and multi-media productions. Tom also chairs the annual Nature Photography Contest and Celebration of Nature at Eagle Creek Park.

Their exhibit will be displayed from 10 AM to 4 PM on Saturday and Sunday at the Lilly Lodge next to the Nature Center at Eagle Creek Park. The exhibit is free and open to the public. There is a park entrance fee. For more information, call the Nature Center at (317) 327-7148.



Annual Nature Photography Contest and Exhibit

The annual Nature Photography Contest sponsored by the Eagle Creek Park Nature Center will be open for public viewing on Saturday and Sunday November 6th and 7th. Photographic works in black and white and color by photographers from around the state will be displayed from 10 AM to 4 PM.

Each year over sixty photographers enter their work for this competition. A wide variety of subject matter is included. Many of these photographers are winners at the annual state fair competition. The entries are judged on technical excellence, composition, artistic merit, and overall impact. A Best-of-Show in black and white and color is also awarded. The Judges for this exhibit are Tom Potter and Gary Potts, who are both award-winning photographers in their own right.

The display of the contest, hung as an exhibit, is free and open to the public. There is a park admission fee.

For more information, call the Nature Center at Eagle Creek Park at (317) 327-7148.

A lovely wine and cheese reception/booksing was held for Carolyn Harstad's book *Go Native! Gardening with Native Plants in the Lower Midwest*, at the Indianapolis Art Center, in Broad Ripple, on Friday, September 17. Thanks to Marilyn Spurgeon, who chaired the event.

Book Review

Before Hoosiers, There Were Fine Plants Here

by JoEllen Meyers Sharp

Some of the best plants for today's gardens have been rooted in the Midwest landscape for hundreds of years.

These plants have survived and thrived regardless of their environment to scent the air and provide food and medicine for American Indians, settlers and residents today.

Some of the plants are familiar, such as purple coneflower, while others, like rattlesnake master, are less well known. What they have in common, however, is that they are native.

"Native plants are defined as those that have grown in a particular area since before the settlers arrived," says Carolyn Harstad, author of *GoNative! Gardening with Native Plants and Wildflowers in the Lower Midwest*, published last month by Indiana University Press (\$35 hardback, \$24.95 paperback).

The lower Midwest is Indiana, Ohio, Illinois, Missouri, Kentucky, the southern parts of Iowa, Michigan and Wisconsin and the northern part of Tennessee, frequently referred to as the Zombie

Zones because of the extreme temperatures.

Harstad shares many of her experiences with native plants and wildflowers, from growing them to hiking through countrysides to view them. Her approach is warm and inviting. The book includes interesting historical tidbits on various plants and practices throughout time. It is easy to read and should be of interest to beginner or experienced gardeners.

As with any good garden book, *Go Native!* covers the basics, from building the soil to planning the landscape. More unusual is a chapter about protecting the landscape when building a new home.

Chapters cover trees, shrubs, vines, ground covers and ferns. Others discuss prairie and meadow plantings, plants for wet areas, woodland gardens and attracting wildlife, birds and butterflies. Chapters list recommended plants and why they are good additions to the Midwest landscape.

Harstad also warns gardeners about invasive exotic plants—those brought

from outside the Midwest or other lands—that can take over natural areas and native plantings. The chapter lists the six worst offenders (garlic mustard, amur honeysuckle, multiflora rose, purple loosestrife, glossy buckthorn and autumn olive) and how to get rid of them.

Harstad, a founder of the Indiana Native Plant and Wildflower Society, is not a native plant snob. She has a great love of hostas and many other plants from exotic lands. However, she says she's come to appreciate the glories of native plants and thinks most gardens would benefit from using them.

Go Native! is a must for the Hoosier gardener and is likely to be at the top of the list for the upcoming gift-giving season.

JoEllen Meyers Sharp is gardening columnist for the Indianapolis Star and the Education Committee Chairwoman of INPAWS.

This review was first printed in the Indianapolis Star, Sunday, October 3, 1999, p. J10.

Order an autographed copy of *Go Native!* by sending a check made payable to INPAWS, for \$24.95, paperback, or \$35, hardcover, plus \$4 postage and handling to

INPAWS
5952 Lieber Road
Indianapolis, IN 46228

Questions?
Call 317-257-9452.

There will be a booksigning for *Go Native!* at the **Little Professor Bookstore** in Fort Wayne on Saturday, October 23, from 1:30 to 3:00 PM.

The West Lafayette chapter of INPAWS is also sponsoring a booksigning for Carolyn on Sunday, November 7, from 1:00 to 5:00 PM at the **Little Professor Book Company** in West Lafayette.

And of course, INPAWS will be selling *Go Native!* at the Annual Fall Conference on November 20.

See the September issue of *Indianapolis Monthly* for an article about Carolyn's book.



INDIANA NATIVE PLANT and Wildflower Society

MEMBERSHIP APPLICATION/RENEWAL

Annual dues pertain to the fiscal year January 1 - December 31. Dues paid after September 1 are applied to the following fiscal year.

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10/99

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Please complete this form (or photocopy first) and mail, along with your check made payable to:
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c/o Katrina Vollmer
3134 Greenbriar Lane
Nashville, IN 47448

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INDIANA NATIVE PLANT *and Wildflower Society*

Volume 6 Number 4 • Winter 1999

NEWS

Conservation Biology Studies of Royal Catchfly

by Rebecca W. Dolan, Ph.D.

For more than 12 years, I have been studying Royal Catchfly (*Silene regia*) in prairies of the midwest.

Conservation biologists strive to understand why some species are rare and to determine which management practices will best insure survival of rare taxa. It is hoped that information gained through detailed studies of single species will apply to other species with similar attributes. This field of study has existed as a discrete scientific discipline for only about 20 years, although botanists have always been interested in rare plants.

With my colleague Eric Menges, currently at Archbold Biological Station in Florida but formerly with Holcomb Research Institute of Butler University, I have had funding from the National Science

Foundation, the Indiana and Ohio Departments of Natural Resources and the Indiana Academy of Science to study Royal Catchfly. This beautiful red-flowered member of the pink family has a global distribution restricted to the eastern United States. It is very common in southern Missouri, with scattered

populations to the north and east. It is state listed as rare or endangered in Illinois, Indiana, Ohio and Kentucky.

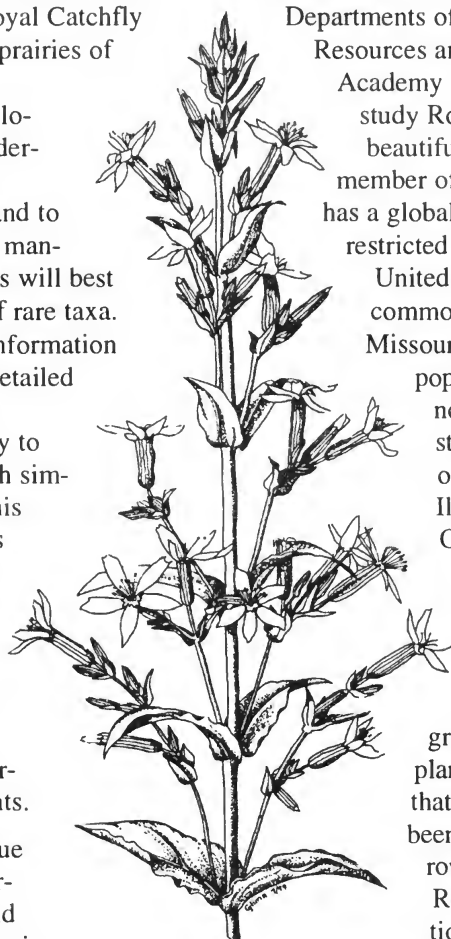
In the eastern part of its range, Royal Catchfly grows in prairies, grass-dominated plant communities that have almost all been converted to row-crop agriculture. Remnant populations remain where the farmers could not reach, in pioneer cemeteries, along

roadside and railroad rights-of-way. Soils farther west were shallow and

rocky and more historical prairie vegetation remains in fields used for pasture or hay production.

There are two other red-flowered *Silenes* east of the Mississippi. They are the woodland Fire Pink (*S. virginica*), a plant promoted by many as a good choice to replace the Chinese peony as the State Flower, and Round-leaved Catchfly (*S. rotundifolia*), a rare plant restricted to sandstone outcrops along the Ohio River in Ohio and West Virginia. Previous studies have shown that these three species are interfertile, but that the offspring are sterile. This sterility barrier, along with habitat specificity, keeps the species distinct and eliminates hybridization as one potential cause of rarity for *S. regia*.

Catchfly . . . continued on page 2



Royal Catchfly (*Silene regia*)
by Jan Lacy

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As part of our work in Indiana, my students revisited all recorded locations for Royal Catchfly in the state. Based on records in the DNR's Heritage database and herbarium records, the distribution of this showy plant has been pretty well documented. Of about 12 reported sites, Royal Catchfly still grows in half. The students had the fun of finding a new population of about 75 plants growing in a fencerow in Warren County, while scouting county roads near another extant site.

The noted early botanical explorer Thomas Nuttall first collected Royal Catchfly in the early 1800's from near St. Louis, MO. He called the plant "one of the most

splendid species in existence." Plants are tap-rooted perennials, up to one meter tall, with striking red flowers with sepals and petals fused at the base. Anthers and stigmas are

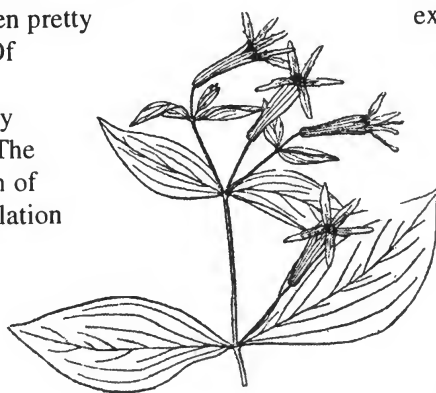
exerted out the end. "Royal" of the common name comes from red being the color of royalty, "Catchfly" from sticky mucilage that is present on the sepals. Red-flowered plants with fused parts are often pollinated by

hummingbirds. We demonstrated, with a series of studies that excluded pollinators of different sizes using chicken-wire cages and mesh bags, that ruby-throated hum-

mingbirds are the principal pollinators, although swallowtail butterflies also visit Royal Catchfly flowers. Flowers are readily pollinated and seed production is prolific, so lack of pollinator service is not currently a problem contributing to rarity.

So, lots of seeds are produced, but are they viable? After cold-treatment and scarification, Eric conducted germination experiments with seeds collected from a range of natural populations. He discovered that seeds from small populations had a lower germination percentage than seeds from larger populations. Could it be that small populations were suffering negative effects of inbreeding?

In order to investigate this possibility, we selected a set of populations with a range of sizes, in terms



Round-leaved Catchfly
(*Silene rotundifolia*)

Catchfly. . . continued on page 4

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We welcome opposing viewpoints.

Articles, letters, drawings should be sent to Carolyn Harstad, 5952 Lieber Road, Indianapolis, IN 46228.

e-mail pharstad@topaz.iupui.edu
arthop@hsonline.net
wilson@hsonline.net

The mission of the Indiana Native Plant and Wildflower Society is to promote the appreciation, preservation, conservation, utilization and scientific study of the flora native to Indiana and to educate the public about the values, beauty, diversity and environmental importance of indigenous vegetation.

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President's Message

by Ruth Ann Ingraham

My two years as President of INPAWS are ending. This is my final opportunity to write under this banner.

First, I thank all of you for your faith in me.

Second, I thank all of you for being you. If you attended the Annual Conference, you know how much INPAWS has done; this was possible only because of your multiple contributions—financial and physical.

I want to acknowledge the team leaders, members of my Executive Board over the past two years, who shared their talents:

Dan Anderson
Chris Brewster
Carolyn Bryson
Bonnie Carter
Lee Casebere
Hilary Cox
Gil and Emily Daniels
Rob Day
Sue Dillon
Becky Dolan
Ted Harris
Carolyn Harstad
Roger Hedge
Ellen Jacquart
Margo Jaqua
Colletta Kosiba
Helen Merrill
Jo Ellen Meyers Sharp
Mike Rian
Reta Rutledge
Michael Stiffler
Kevin Tunesvick
Jean Vietor
Katrina Vollmer
Anne Wilson
Dianna Zamani

Of the goals set a year ago, we have accomplished the following:

We have a dynamic new chapter centered in Lafayette—the West Central Chapter of INPAWS.

We published two brochures, one on non-native invasive plants and one on native plants to use in our landscaping with a list of sources.

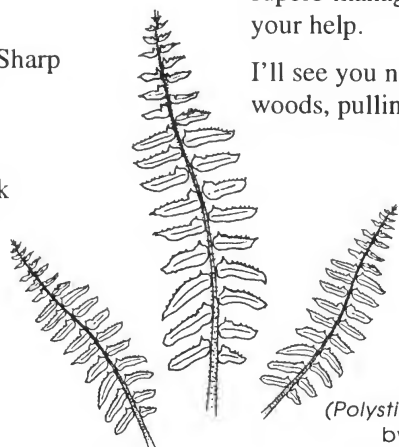
We planted our first permanent native plant demonstration garden along the Canal Walk in downtown Indianapolis.

Unachieved goals are not forgotten and are being pursued. Changing the official state flower from the Chinese peony is in the works.

A personal goal of mine is to examine my own properties and free them from all invasives. Purple winter creeper (*Euonymus fortunei*) in Indianapolis is going to go as well as Maiden Grass (*Miscanthus sinensis*) in Brown County. I challenge each of you to do the same.

INPAWS does not suffer from a shortage of tasks and challenges. Your new Officers and Committee Chairs have a full plate. Incoming President Carolyn Bryson will be a superb manager, but she will need your help.

I'll see you next spring in the woods, pulling up garlic mustard.



Christmas Fern
(*Polystichum acrostichoides*)
by Jeanette Ming

Bouquets to those who made generous contributions to INPAWS in 1999

Indiana Academy of Science

Corporate

Dr. and Mrs. Lowell Barnes, Pendleton
Spence Landscaping and Nursery, Inc.,
Muncie

Sponsor

Emily and Gil Daniels, Indianapolis

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Linda Shikany, Indianapolis
Susan and John Taylor, Muncie
Kenneth and Cheryl Vieth, Edinburg
Barbara Weber, Terre Haute

In Memory of Dr. Sherman Minton
Ruth Ann Ingraham

In-Kind Contributions

Indiana Department of Natural Resources,
Division of Nature Preserves
Creative Ink
Mark Holeman Nursery
Indiana Historical Society
Nu-Tec
Oliver Winery
Ransburg Studios
Spence Landscaping and Nursery, Inc.
U.S. Forest Service

Special thanks for hosting the INPAWS
website, www.inpaws.org,
to Graphx, Inc. of Woburn, Massachusetts,
www.graphx.com, a leading developer of
print imaging software

of number of Royal Catchfly plants, and undertook a series of studies at each site. We permanently marked plants at each site with metal tags and mapped their locations so that plants could be relocated. For up to seven years we revisited study populations to see if individual plants has survived or died and to monitor new seedlings. We could determine if populations were stable, declining, or growing in number. We also could construct actuarial tables (like those for humans used by insurance companies). Based on the data from each site, we determined the likelihood of survival for a plant of a given life history stage (e.g., the likelihood of surviving from the seedling stage until juvenile, juvenile to reproductive etc.). At most sites, most plants were very long-lived and over 90% of plants survived the entire period of the study. Recruitment of new seedlings was very low and mostly occurred on soil that had been disturbed, as by rodent digging.

To address the potential role of inbreeding and lack of genetic variation in contributing to rarity in Royal Catchfly, we used a laboratory technique to quantify genetic variation. My students and I looked at allelic variation in essential enzymes of metabolism (requiring only a single leaf from each study

plant) using starch gel electrophoresis and staining to visual isozymes. Studies of rare plants often focus on the potential role of limited genetic variation. Genetic variation is viewed as a resource a species can draw on for short-term environmental adaptation (such as surviving this summer's unusual drought) and for long-term evolutionary change.



Fire Pink (*Silene virginica*)
by Jeanette Ming

Interestingly, we found no relationship between population size and

genetic variation.

What we did find was evidence for the overwhelming importance of fire as a management tool to promote persistence of Royal Catchfly populations. Royal Catchfly colonies that received prescribed burning, regardless of population size, genetic variation, or degree of isolation of a site from other populations, were the most demo-

graphically healthy. That is, they showed stable or increasing numbers of Royal Catchfly plants. Prescribed burning is a common management practice in remnant prairies to kill seedlings of woody trees and shrubs that overtop shade-intolerant prairie grasses and forbs.

We used computer simulations that projected our actual observed demographic fluctuations in field populations out over 100 and 1,000 years. Sites receiving burning were assured, based on our data, of sur-

viving to the next millennium. Fire's beneficial effect on prairie vegetation has long been known. In the case of Royal Catchfly, I think that fire's benefit is to help existing plants hold on, rather than to affect seed germination. Although its mechanism calls for further study, we demonstrated that, for Royal Catchfly, it is the single most important of the factors we studied for promoting persistence of this "splendid species."

Rebecca Dolan is Director of the Friesner Herbarium at Butler University, an INPAWS charter member, and author of the series Botany 101 in this newsletter. Installments four and five coming next year.

Illustration of Royal Catchfly by Jan Glimm Lacy, botanical illustrator and charter member of INPAWS. Jan was Instructor of Botanical Drawing and Illustration for The University of Michigan Matthaei Botanical Gardens Adult Education Program, a member of the Michigan Botanical Club and the Guild of Natural Science Illustrators. She has illustrated Practical Botany, Michigan Trees, and many botanical journal articles.

Illustration of Fire Pink by Jeanette Ming. Jeanette has been art editor at Worrall Community Newspapers in Union County New Jersey, and is currently employed at the Metropolitan Museum of Art in New York City. She illustrated the line drawings for Go Native! Gardening With Native Plants and Wildflowers in the Lower Midwest, published by Indiana University Press, September 1999.

Garlic Mustard Rears Its Ugly Head

Now is the time to go on a "search and destroy" mission

by Carolyn Harstad

As you walk through a wooded area, along the roadsides, or even through your own yard this fall, you may suddenly see a fresh bright green, scalloped heart-shaped leaf poking its head above the carpet of autumn's golden buffy leaves. STOP! Reach down and mercilessly yank out that bright green villain by the roots and stuff it into a black plastic bag. Garlic Mustard is one of our worst invasive exotics and if it is not controlled, it will be responsible for single-handedly wiping out our woodland wildflowers. Guaranteed!

Late fall and early winter are some of the best times to pull Garlic Mustard because it is so readily apparent. And with the recent moisture, it is easy to bend over, grasp the thickened carrot-like white root right at ground level, and with a steady pull get that nasty fellow out of there.

Now, if you enjoy eating spinach and garlic, you may want to wash the leaves and cook them for dinner, incorporate them into a vegetable lasagna, or even use them fresh in a salad. Don't worry about the safety of eating this plant. It was first introduced into this country as a potherb and is still grown by gardeners in Germany. And it actually tastes quite good. Since Garlic

Mustard is a biennial, its first year leaves are more tender and tasty than those of the second year. So this is the time to collect and eat them. ALL!

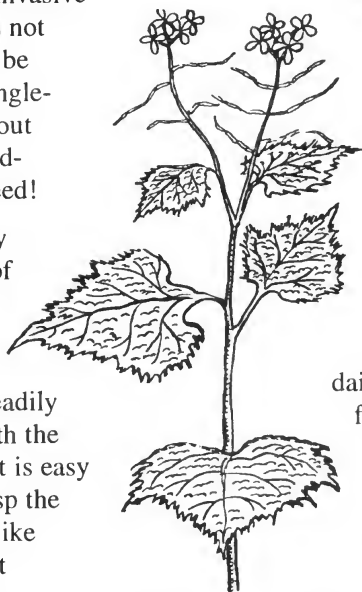
Or you can just solarize the leaves in a tightly tied black plastic bag and put them into your weekly trash. Just don't let them lie around.

These plants are among the most persistent I have ever known. One spring, I left some lying beside a path with seeds just beginning to form. Even though the roots totally dried out and the plants literally died, the seeds kept right on developing.

And don't be misled by its pretty leaves, or by its dainty four-petaled white flowers in the spring either. This plant is neither dainty nor pretty. It is not even polite or law-abiding. Garlic Mustard is a tough plant with

criminal tendencies that needs—and

deserves—speedy execution! And its determination to survive is incredible. So when you see those familiar leaves poking up through the leaves, STOP! YANK! and DESTROY!! Take a walk through your neighborhood, your city park, or your own yard, and look for this aggressive invasive. And pull out every Garlic Mustard plant you see. Now is the time!



Garlic Mustard (*Alliaria petiolata*)
by Jeanette Ming

Sale of *Go Native!* benefits INPAWS

INPAWS has purchased, at cost, from Indiana University Press, a number of copies of

Go Native! Gardening with Native Plants and Wildflowers in the Lower Midwest,

by Carolyn Harstad. Proceeds to the INPAWS treasury from the resale of this impressive book, which JoEllen Meyers Sharp, gardening columnist for the Indianapolis Star, says "is a must for the Hoosier gardener," so far total about \$1,500.

Help further the goals of our society, while enjoying this comprehensive, well written and lavishly illustrated paean to native plants!

To order an autographed copy of *Go Native!* send a check made payable to INPAWS, for \$24.95, paperback, or \$35, hardcover, plus \$4 postage and handling to

INPAWS
5952 Lieber Road
Indianapolis, IN 46228

If you are buying the book as a gift, and would like to have it autographed, please indicate the gift recipient's name.

Questions?
Call 317-257-9452

Sixth Annual Conference

November 20, 1999

by Carolyn Bryson

New Natives for the Garden—Spice for the Gardener, was the title of the keynote address for the sixth annual INPAWS fall conference. Dr.



Jean Vietor, Emily Daniels,
Lee Casebere, Katrina Vollmer

Richard Lighty, retired Director of the Mt. Cuba Center for the Study of Piedmont Flora, Greenville, Delaware, discussed the selection and propagation of naturally occurring variants of native plants, shrubs, and trees in order to obtain new cultivars. Dr. Lighty has introduced many new cultivars, including Aster 'Purple Dome' and Red-twig Dogwood 'Silver and Gold.' His slides demonstrated the



diversity within many familiar plant families and included slides of petals and leaves he collected to show variations in color, size, and shape. Tissue culture, a relatively new method of propagation, has made it possible to propagate and evaluate plants much more quickly than was possible in the past.

Kevin Tunesvick, out-going vice-president of INPAWS and a horticulturist at Spence Nursery, Inc., presented slides of Rocky Mountain wildflowers, many of which are relatives of our Indiana native plants. Although the landscape scenes in his slides were serene, Kevin left us with visions of him quickly tripping down the mountainside to avoid lightning and hailstones.

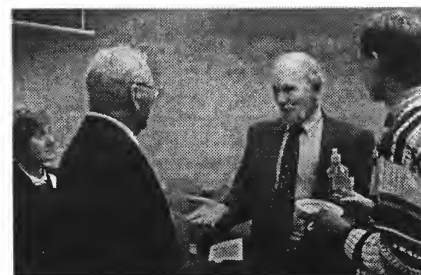
Roger Hedge, DNR Division of Nature Preserves, included historic pictures in his presentation, *History of Natural Protection in Indiana*, and helped us to understand the long process that is required to identify and reclaim areas to be protected.

Concurrent workshops were offered during the afternoon. Dr. Rebecca Dolan, Director of the Herbarium at Butler University, discussed scientific methods for studying rare plants, particularly Royal Catchfly (*Silene regia*). She described pollination experiments conducted by some of her students.

In her slide presentation, Carolyn Harstad explained why gardening with native plants is good for our environment. She signed copies of her book: *Go Native! Gardening with Native Plants and Wildflowers in the Lower Midwest*. Carolyn was one of the founders of INPAWS and sales of her book benefit our organization.

Ellen Jacquart, Director of Stewardship, The Nature Conservancy, showed slides of many invasive plants in Indiana and introduced our two new INPAWS brochures: *Invasive Plants in Indiana* and *Landscaping with*

Plants Native to Indiana. Ellen and her committee developed the invasives brochure which includes color photographs of the ten most noxious invasive plants, allowing them to be readily recognized by the public. Also, the brochure identifies more acceptable alternative plants. The Nature Conservancy, the Indiana Academy of Science, and INPAWS helped to finance the production of the invasives brochure. Rob Day and his committee developed the landscaping brochure which lists desirable native plants to use in the landscape and vendors offering them for sale. Both brochures have been eagerly awaited. We hope to distribute them widely during the coming year.



Mildred and Rolland Kontak,
Dr. Richard Lighty, Kevin Tunesvick

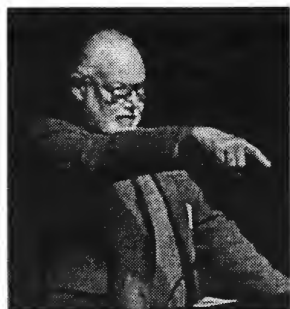
Eleanor Rosellini, Nancy Schmutzler, and Jan Tellstrom sparked a lively discussion on the topic of recreating native plant areas. The necessity and desirability of annual burning became a hot topic due to our present drought.

Christine Brewster, Museums of Prophetstown, explained how she has started native plants from seed and demonstrated her cost-efficient light apparatus.

Tom Swinford, DNR Division of Nature Preserves, gave examples of Indiana plant communities and

habitats in his informative slide presentation.

During the Annual Business Meeting, Ruth Ann Ingraham,



Gil Daniels

President, introduced and thanked all of the officers and committee chairpersons who worked with her during the past two years. Becky Dolan, Grants and Awards chairman, and Jean Vietor, Treasurer, announced grants and awards distributed by INPAWS this year: Fourteenth Annual Wildflower Foray, \$150.00; Shelby County Soil and Water Conservation District, \$500.00; a Plaque for the *Best Use of Native Plants in a Constructed Landscape* to Clare Bennett Associates at the annual meeting of the Indiana Chapter of the National Association of Landscape Architects; Cornell University Garlic Mustard Research Project,



Ted Harris, Doug Spence

\$1000.00; U.S. Fish and Wildlife Integrated Environmental Curriculum development, \$200.00; and Northern Indiana Citizens Helping Ecosystems Survive (NICHES) Weiler-Leopold Nature Reserve, \$2000.00. During the meeting, Becky presented a plaque

to Jan Tellstrom to recognize his use of native plants at the Smock Golf Course.

Officers elected for 2000-2001 include Carolyn Q. Bryson, President; Ken Collins, Vice-President; Jean Roberts, Recording Secretary; Clare Oskay, Treasurer; and Roger Hedge, Corresponding Secretary.

Following the election, incoming president Carolyn Bryson presented Ruth Ann with a framed certificate recognizing her role, both as a Founder and as INPAWS president during the years 1998 and 1999. Carolyn then challenged each



Peter Harstad, Indiana Historical Society, receiving thanks for hosting the conference

member present to volunteer to engage in at least one activity for INPAWS during the coming year.

The conference attendees enjoyed a variety of displays, including those by ACRES, Audubon, Central Indiana Land Trust (CILT), 4-H, Indiana Department of Natural Resources-Division of Nature Preserves, The Nature Conservancy, Indy Parks, the Museum at Prophetstown, Munchkin Nursery, Wind Leaves, and INPAWS logo items. The Indiana Academy of Science, United Plant Savers, and INPAWS authors JoEllen Myers Sharp and Carolyn Harstad offered books for sale. Beauty in nature was exhibited in the paintings and

watercolors of Jean Vietor and in the photographs of Carolyn Harstad.

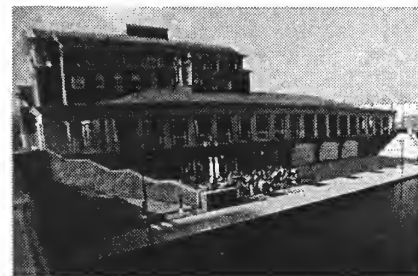
Blackberry Jam enlivened the social hour at the conclusion of the conference with their spritely music.



Outgoing President Ruth Ann Ingraham
Incoming President Carolyn Bryson

INPAWS was privileged to be one of the first groups to use the beautiful new Indiana Historical Society building, thanks to the efforts of Executive Director Peter Harstad, a founding member of INPAWS. More than 165 persons attended the conference and were able to see the native plant demonstration garden that INPAWS has recently installed at the new IHS facility.

We extend our thanks to Conference Co-chairs Emily and Gil Daniels and their committee: Mary Anne and Larry Schlagenhauf, Betsy Ingle, Linda Oxenrider, Ruth Ann Ingraham, Mildred and Rolland Kontak, Margaret Mathews, Carolyn Harstad, and Betsy Wilson for their help in making our Sixth Annual Fall Conference a great success.



Indiana Historical Society

M U L T I F L O R A E

Invasive Plant and Landscaping Alternatives Information Now Available

The Indiana Native Plant and Wildflower Society (INPAWS) now has available two new brochures dealing with the problem of invasive plants in Indiana and alternative plants to use in landscaping and wildlife plantings.

Invasive Plants in Indiana describes and provides photos of many of the plants currently invading natural areas in the state. Such species as garlic mustard, purple loosestrife, bush honeysuckle, and buckthorn are aggressive, non-native species that move into Indiana's forests, wetlands, or prairies and displace native plants.

Invasive plants hurt wildlife by eliminating the plants our native animals need for food and cover.

They also destroy habitat for rare wildflowers and animals; two-thirds of all endangered species are threatened by invasive plants. Agencies around Indiana spend hundreds of thousands of dollars each year trying to eradicate these species and protect our natural areas. Invasive species like Johnson grass and Canada thistle also affect agriculture. Agricultural losses and control costs due to invasive plants are estimated at \$15 billion per year in the United States.

Landscaping with Plants Native to Indiana provides alternatives to consider when planting gardens or wildlife areas. It lists native plants which are hardy, beneficial for wildlife and easily available from

nurseries. The brochure also features a list of nurseries in Indiana and surrounding states which provide native plants.

These brochures were produced in a cooperative project between INPAWS, The Nature Conservancy, I.D.N.R. - Division of Nature Preserves, U.S.D.A. Forest Service, and Indiana Academy of Science.

For copies of the brochure, please call The Nature Conservancy at 317-923-7547 or Division of Nature Preserves at 317-232-4052.

Ellen Jacquart

Are you moving? Will you be away for a while?

We don't want you to miss a single issue of the newsletter. So if you have a change of address, or will be away only temporarily, please fill in the form below.

NAME _____

ADDRESS CHANGE _____

CITY CHANGE _____

STATE AND ZIP CHANGE _____

AWAY STARTING DATE _____

RETURN STARTING DATE _____

Mail this form to:

Katrina Vollmer
3134 Greenbriar Lane
Nashville, IN 47448

or email information to: katrinajo@iquest.net.



NATURE WALKS AT BUTLER UNIVERSITY

Join Dr. Rebecca Dolan for nature walks on the **second Tuesday** of each month at noon:

January 11

Microscopic canal critters (indoor event)

February 8

Birds of the campus

March 14

Spring Wildflowers I

Meet behind Gallahue Hall on the Butler University campus near the greenhouse. Walks will last about 45 minutes. There is no charge and all are welcome.

If you would like to receive a monthly reminder of the walk, or wish to be dropped from the reminder list, please call Dr. Dolan at 317-940-9413, or email rdolan@butler.edu.

Bill to Change the **Indiana State Flower** from the Peony, a native of China, to Our Own Native, the **Fire Pink** (*Silene virginica*),
Now Being Drafted!

Famous Hoosier botanist Charles Deam said, "The Indiana flora is rich in the number of native species that are attractive and beautiful. Out of our abundance of native flowers (2,000 species) we should be able to select one for our state flower...Why advertise our ignorance of our native plants? I appeal to readers to take pride in our state and in our native plants."

The Indiana state flower was first the Carnation (Europe) then Tulip Tree (Indiana) then Zinnia (Mexico) and finally Peony (Asia).

In 1996 the Indiana Academy of Science, under the direction of Bill McKnight, enlisted a panel of 55 experts who suggested 13 of Indiana's native plants as possible choices to replace the current state flower, the peony. Posters and descriptions of the candidate flowers were distributed to all 4,041 fourth-grade classes in Indiana, in both public and private schools. More than 6,000 fourth-graders voted for the Fire Pink. The nearest competitor, Nodding White Trillium received 4,000 votes.

If you believe, as Charles Deam did, in the importance of recognizing our native flora, contact Carolyn Harstad, 317-257-9452, email pharstad@topaz.iupui.edu.

www.inpaws.org

Visit our website for the latest news and information about INPAWS and native plant issues, and new links to sites such as the **Friesner Herbarium** at Butler University.

INPAWS' two new brochures: **Landscaping with Plants Native to Indiana** and **Invasive Plants in Indiana** will soon be online.

We would like to update our site with **your** news, information, comments, ideas, opinions, suggestions. In short, anything of interest to all concerned with preserving native plants and their habitats.

Please email Anne Wilson
wilson@hsonline.net

Don't you know someone who would just love a gift membership in INPAWS?

Introduce a friend to this society of more than 600 members. We are diverse (like a healthy natural habitat) in our interests—naturalists, gardeners, environmentalists, hikers, botanists, artists, photographers, both amateur and professional, fun-loving, serious—but all united by a desire to preserve the beauty of the natural, wild state of Indiana.



INPAWS GIFT MEMBERSHIP

MY NAME _____

TELEPHONE _____

I would like to give a gift membership to:

NAME _____

ADDRESS _____

CITY/STATE/ZIP _____

TELEPHONE/EMAIL _____

at this level: ☐ Student \$10 ☐ Individual \$18 ☐ Family \$25

Annual dues pertain to the fiscal year January 1-December 31. Dues paid after September 1 are applied to the following fiscal year.

Please complete this form and mail, along with your check made payable to:
Indiana Native Plant and Wildflower Society, or INPAWS

c/o Katrina Vollmer
3134 Greenbriar Lane
Nashville, IN 47448

email katrinajo@iquest.net

Committee Reports

Demonstration Gardens

Orchard-in-Bloom, the last days of April and first days of May, was once again successful due to stalwart volunteers and consistent support from the people who supply the plants: Mark Holeman Landscaping, Inc. (David Gorden), Munchkin Nursery (Gene Bush) and Spence Nursery (Doug Spence and Kevin Tunesvick). This year even the weather co-operated and we stayed dry and relatively warm. The theme was wetland and pond plants—children and adults alike just had to trail their hands in the water whilst admiring the marsh marigolds, irises and sedges!

This year saw the start of something I hope will be a new trend: Peter Harstad, President of the Indiana Historical Society, offered INPAWS an empty piece of land by the canal for our first permanent demonstration garden. After much planning to

decide on the best low maintenance planting suitable for a rather difficult site, two workdays in the middle of November saw 75% of the planting accomplished; most of the rest of the plants are waiting for another fine (though probably not so warm) day and the people power to get them into the ground before it freezes!

Hillary Cox



Purple Coneflower
(*Echinacea purpurea*)
by Jeanette Ming

Some of the plants already in the Indiana Historical Society garden:

Purple Coneflower
(*Echinacea purpurea*)
Sweet Black-eyed Susan
(*Rudbeckia subtomentosa*)
Showy Black-eyed Susan
(*Rudbeckia fulgida speciosa*)
Butterflyweed
(*Asclepias tuberosa*)
Firepink
(*Silene virginica*)
Blue False Indigo
(*Baptisia australis*)
Aromatic Sumac
(*Rhus aromatica* 'Gro-Low')
Arrowwood Viburnum
(*Viburnum dentatum*)
Serviceberry
(*Amelanchier canadensis*)
New Jersey Tea
(*Ceanothus americanus*)

Grants and Awards

Three awards were made this year:

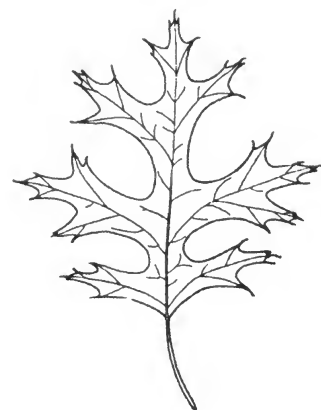
1 The first annual INPAWS Award was given in conjunction with the Indiana Chapter of the American Society of Landscape Architects. This award honors projects that feature native plants. Claire Bennett Associates received the award for their landscaping and interpretive signage along the Cardinal Greenways project in Muncie. They received a plaque to acknowledge the award.

2 Jan Tellstrom of Carl Smock Golf Course was the 1999 winner of the INPAWS Special Award (voted

by the INPAWS Board) for promoting the use of native plants. Jan also received a plaque to acknowledge his award.

3 The first recipient of the INPAWS Small Grants Program, a competitive cash award to support projects that promote the mission of INPAWS, was Noell Krughoff with the Shelby County Soil and Water Conservation District. She received \$500 to purchase native plants to enhance outdoor laboratories at three elementary schools.

Rebecca W. Dolan



Scarlet Oak (*Quercus coccinea*)
by Jan Lacy

for 1999

Membership

Membership in INPAWS is thriving. So far we have two memberships paid through 2001, 77 paid through 2000 and 407 paid through 1999, making a total of 484. There are 63 Indiana counties represented; 45 affiliates; seven libraries; 21 media and 57 "interested." The total database numbers 1254, including former members. Postings are done almost daily and correspondence is answered in a timely manner.

Mailings will now be done "in-house" after the fiasco of the mailing, by an outside mailing company, of our Summer 1999 newsletter, in which the street address was left off the label! (If

you never received the second mailing of that issue, please contact me.)

During this administration, we updated the membership brochure, began offering gift memberships and added a change of address form in the newsletter. Please use this form for changes, as it costs INPAWS \$1.10 every time a newsletter is returned and remailed. An exciting new feature to our web page is a printable membership application. Within days of its appearance on the internet, two applications were sent in!

Now for my pep talk. Your dues are due NOW and don't forget you can pay for more than one year at a time. This is a great organization working to preserve, protect and study our native plants and wildflowers, and to educate people concerning them. Please tell your friends, neighbors, family or anybody who will listen about INPAWS. I have membership brochures and would be happy to share them with you.

INPAWS is an up and coming organization, so keep the memberships coming.

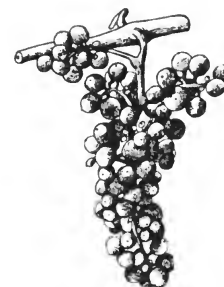
Katrina Vollmer
katrinajo@iquest.net

Cornell Garlic Mustard Project

The INPAWS board agreed to send the Cornell Garlic Mustard project another \$1,000. A short time ago, Bernd Blossey (the coordinator of the project) informed us that the Department of Defense has agreed to fully fund the Cornell overseas research for the next three years. This work would concentrate on finding garlic mustard-feeding "insect specialists" (which feed on garlic mustard and nothing else).

Although they appear to be well-funded now for the overseas work, they have project costs at Cornell with which they need financial assistance. The INPAWS money will go for that. The State of Indiana, with possible assistance from other cooperators, is also providing money to Cornell for the same purposes.

Lee Casebere



Riverbank Grape (*Vitis riparia*)
by Jan Lacy

Conservation

In 1999, INPAWS' Conservation Committee continued to address legislation and policy issues affecting natural communities in Indiana and elsewhere. Issues included the Jefferson Proving Ground National Wildlife Refuge in Indiana, the Grand Kankakee Marsh

National Wildlife Refuge in Indiana and Illinois, the Aldo Leopold National Wildlife Refuge in Wisconsin, the Endangered Species Recovery Act, the federal Lands Legacy Initiative, and World Trade Organization's barriers to safeguarding the U.S. from importing

invasive species. In a newsletter article (Spring 1999), entitled *How Much Natural Area Protection Should Indiana Have?*, the committee advocated protecting, restoring and connecting landscape-sized natural areas as the surest means of promoting the survival of Indiana's native flora and fauna.



INDIANA NATIVE PLANT and Wildflower Society

MEMBERSHIP APPLICATION/RENEWAL

Annual dues pertain to the fiscal year January 1 - December 31. Dues paid after September 1 are applied to the following fiscal year.

☐ Student \$10 ☐ Individual \$18 ☐ Family \$25 ☐ Patron \$100 ☐ Sponsor \$250 ☐ Corporate \$500
Supporter (Additional Donation) \$ _____ Total Enclosed \$ _____

NAME _____
ADDRESS _____
CITY _____
COUNTY _____

TELEPHONE _____
EMAIL/FAX _____
STATE _____ ZIP _____
☐ NEW ☐ RENEWAL

How did you hear about INPAWS?

12/99

GIFTS DO HELP. INPAWS donors at the *Supporter, Patron, Sponsor* and *Corporate* levels will receive special recognition. All donations above *Student, Individual* and *Family* dues are most appreciated and can aid our mission. Donations are tax-deductible to the extent provided by law.

Please complete this form (or photocopy first) and mail, along with your check made payable to:
Indiana Native Plant and Wildflower Society, or INPAWS
c/o Katrina Vollmer
3134 Greenbriar Lane
Nashville, IN 47448

I would like information on these committees:

- | | | |
|--|--|--|
| <input type="checkbox"/> Annual Meeting | <input type="checkbox"/> Hospitality | <input type="checkbox"/> Programs/
Field Trips |
| <input type="checkbox"/> Auction | <input type="checkbox"/> Membership | <input type="checkbox"/> Publications |
| <input type="checkbox"/> Conservation | <input type="checkbox"/> Native Plant
Education | <input type="checkbox"/> Publicity |
| <input type="checkbox"/> Demo Gardens | <input type="checkbox"/> Native Plant
Rescue | <input type="checkbox"/> Speakers
Bureau |
| <input type="checkbox"/> Fund Raising | <input type="checkbox"/> Newsletter | <input type="checkbox"/> Special
Projects |
| <input type="checkbox"/> Grants & Awards | | <input type="checkbox"/> Volunteers
Coordinator |
| <input type="checkbox"/> Historian | | |
| <input type="checkbox"/> Other | | |



INDIANA NATIVE PLANT and Wildflower Society

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